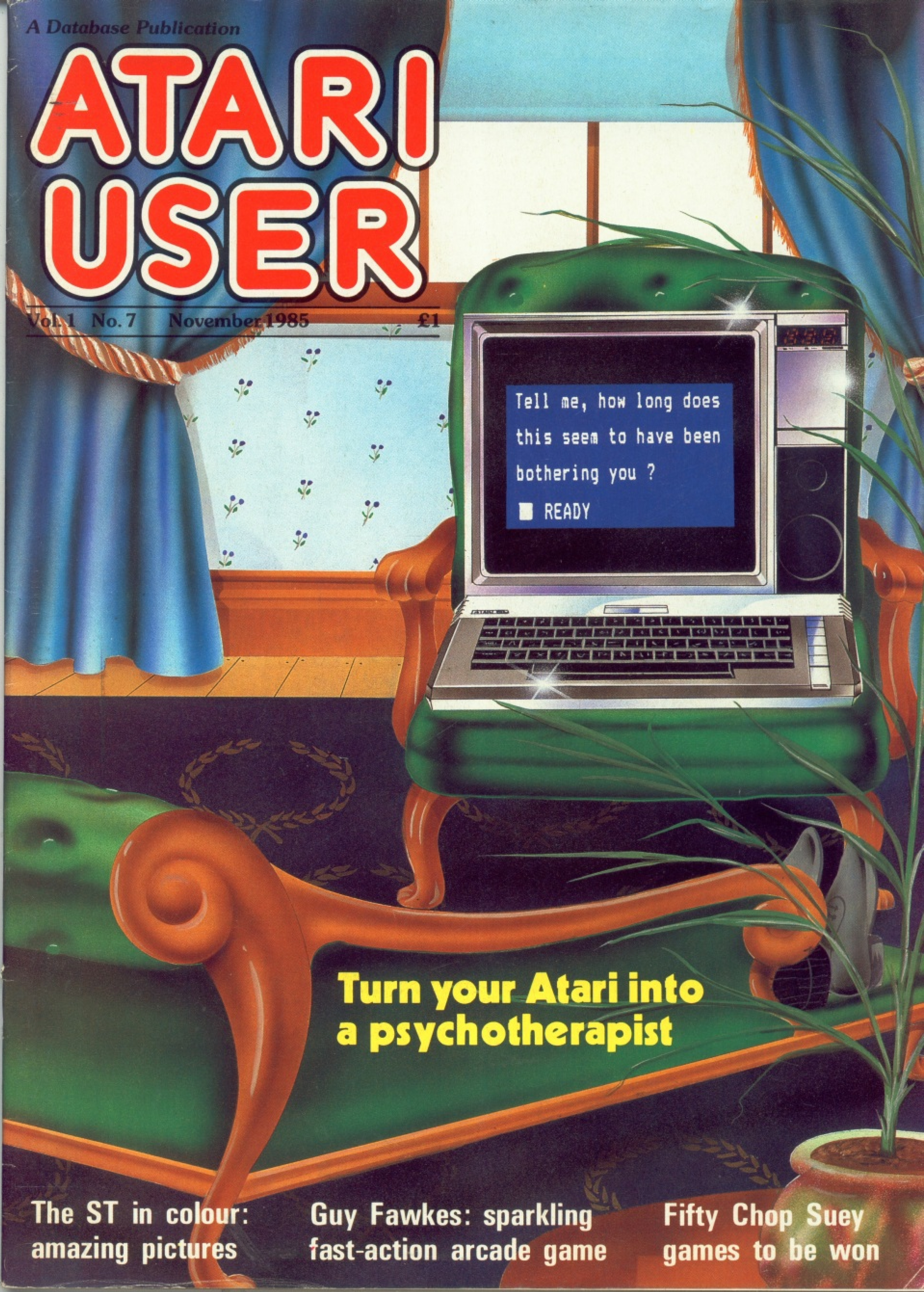
A Database Publication

ATARI USER

Vol.1 No.7 November 1985 £1



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The ST in colour: amazing pictures

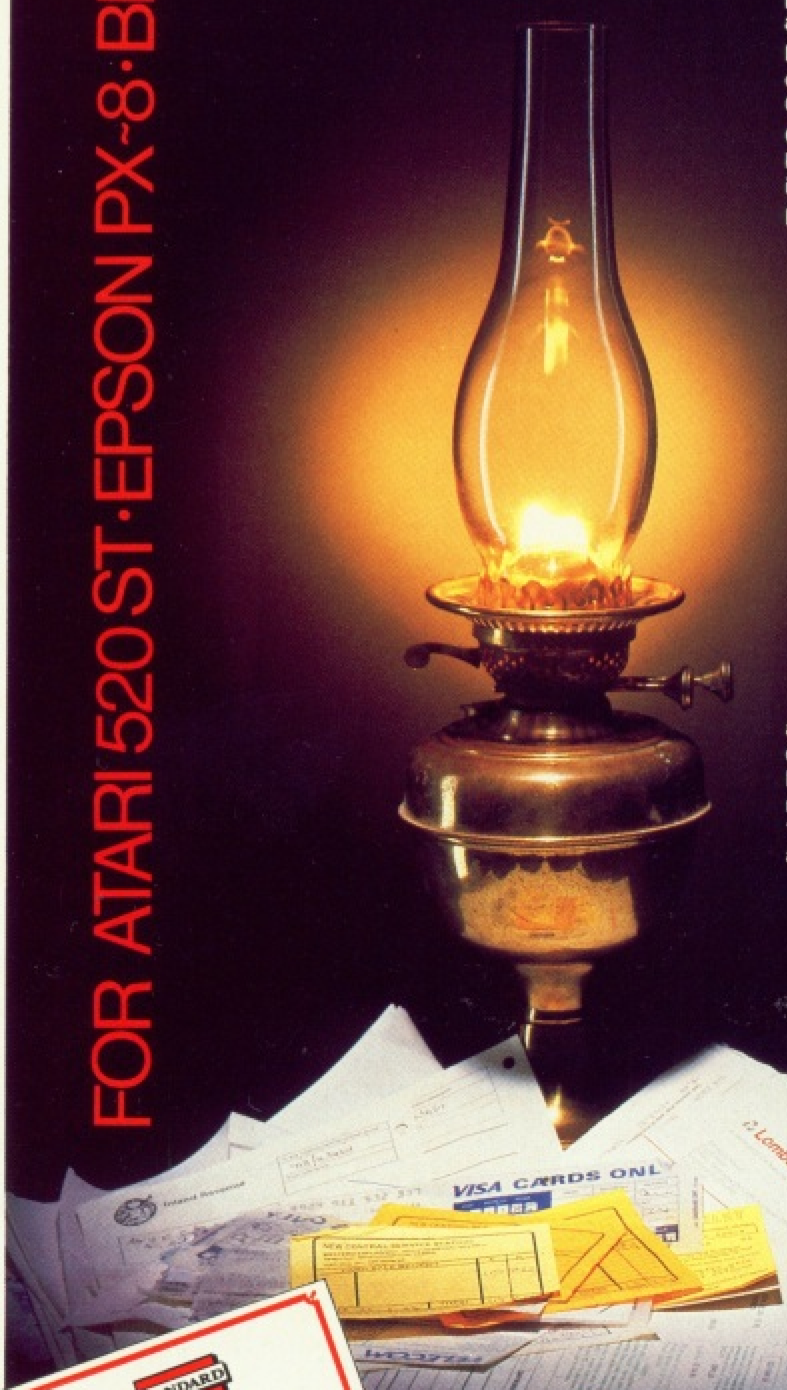
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Name ______
Address ______
______ **Tel. No:** ______
Type of Business ______ **No. of employees** ______

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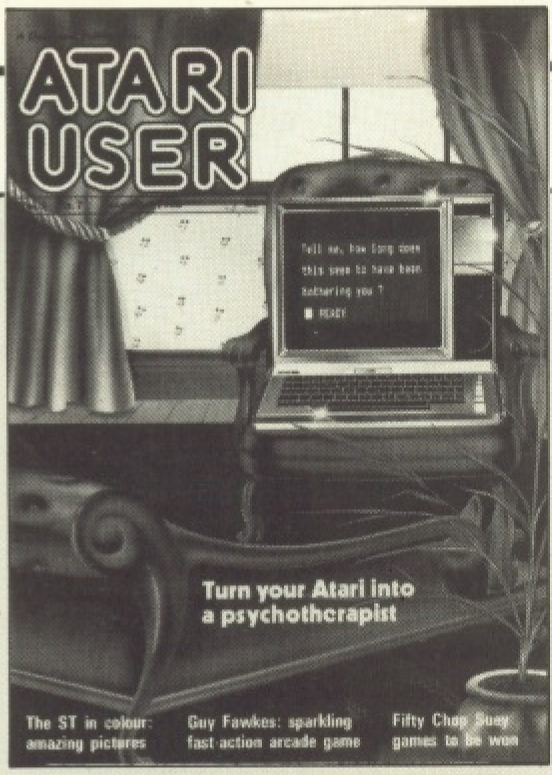
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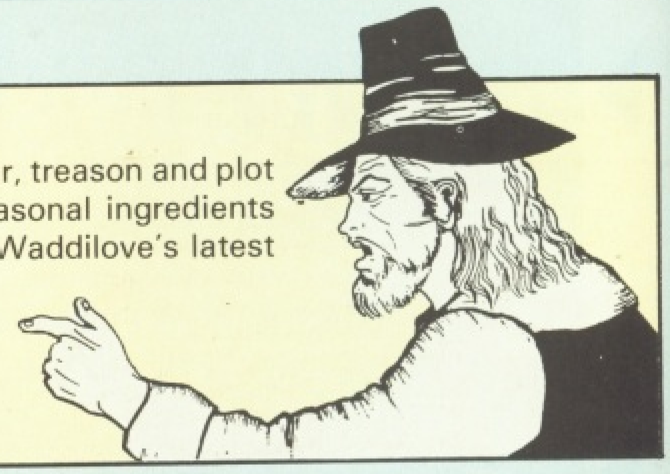
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"Atari User" welcomes program listings and articles for publication. Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette tape or disc. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication by Database Publications Ltd will be on an all-rights basis.

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CREEPSHOW!
Superb machine code pinball game is FREE with this months disc and tape
See Page 60

INTERNATIONAL

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No flood of cut-price STs, says Atari

ATARI UK has described reports of cut-price 520STs flooding into the country through the back door as "suspect to say the least".

The company has investigated several stories concerning possible black market machines and found them to be without foundation.

"All the leads we have followed up in this area have proved to be fruitless", says Max Bambridge, Atari UK's general manager.

"Naturally because of the intense interest generated by the 520ST some people will have gone to considerable lengths to get their hands on them", he said.

"But if there is such a market it is much more likely to be grey rather than black".

However one major distributor still insists there is an under-the-counter operation involving hundreds of machines. These are allegedly being offered for sale at discounts of more than £70.

These claims come from Tony Deane, a director of Silica Shop, the Atari distributor for Greater London south of the Thames, Sussex, Kent and Middlesex.

"We believe that these machines are coming in via the back door from sources in the Far East and Holland", he told *Atari User*.

"We know this to be true because dealers in our own area have bought them. This is all making a mockery of the Atari distribution plan for the ST which effectively carved the company up into regions".

Tony Deane added a warning for both dealers and customers that they may well get their fingers burned if they do not buy from legitimate sources.

"If a machine has not been purchased through normal channels the guarantee is not valid", he said. "So if it goes wrong there is no comeback for the buyer.

"Then they will realise that, even if they have bought it cheaply it certainly won't be good value for money".

Top selling Atari programs

Compiled every month for Atari User by Terry Blood Distribution Ltd.

1	**Boulderdash**	*Mirrorsoft*
2	**Spot the Ball**	*Thorn EMI*
3	**Pole Position**	*US Gold*
4	**Kissin' Cousins**	*English*
5	**Chop Suey**	*English*
6	**Summer Games 2**	*US Gold*
7	**Red Moon**	*Level 9*
8	**Beach-Head**	*US Gold*
9	**Daley Thompson's Decathlon**	*Ocean*
10	**Elite**	*Firebird*

Drive on schools

ATARI is poised to gain a foothold in the UK educational market with a discount scheme aimed at schools and colleges.

The company has announced that it is offering 10 per cent off all 8 bit computer hardware, peripherals and software.

In addition it is aiming to win over the colleges with 15 per cent off the ST machines and their associated peripherals and software.

The Mac basher

A BENCHMARK test of computer speed has proved conclusively that the 520ST can show a clean pair of heels to the Apple Macintosh.

Set up by Antic, an American computer magazine, it saw the Atari flagship machine execute a program in 3.8 seconds which took the Mac from 7 to 13 seconds.

Using the most widely accepted standard in the computer industry, the procedure involved turning the micros loose to find all prime numbers between 3 and 13,681.

By turning in a time of 3.8 seconds, the 520ST revealed itself to be as fast as minicomputers running on the Unix system.

Target is 20 million

ATARI has targetted a potential worldwide market of up to 20 million customers for the ST range.

This was revealed by the corporation's chairman Jack Tramiel during a recent visit to London.

Discussing the long term strategy behind the global marketing of the ST, he told *Atari User:* "What we have out there are 20 million people who have already bought 8 bit machines.

"Now these people are looking to upgrade them. They want something that's faster and easier and at the right price. Well that is just what Atari is offering them".

Jack Tramiel believes that his team will set the pace because its members have a better understanding of what the end user really wants.

"The majority of manufacturers do not understand the customer", he insists. "All of them believe that with advertising they can reach the position that General Motors once held. That being they were able to persuade people that all they wanted out of life was a yellow car.

"Well that was okay until the Japanese arrived and offered blue cars of better quality at a lower price. Suddenly nobody wanted the yellow cars any more.

"That's what is now happening in the computer industry".

The outspoken entrepreneur is unflinching in his belief that it will be the informed computer user who will make Atari number one.

"When I left Commodore I knew that the only way to bring this business back alive was to continue my philosophy of giving the end user – the most intelligent person in our society – the best technology available at the time", says Jack Tramiel.

"As far as I am concerned he has had enough of 8 bit products, even with all the advertising that's been done.

"The launch of the ST was the best I have been involved in since the beginning. It proved to me once again that the end user knows best what he wants.

Atari 'seal of approval' for top software

THE creme de la creme of Atari XL and XE software is now instantly recognisable, says Atari, having just initiated its own software "awards".

It is giving Atari Approved Software labels to what it believes are the best titles available in five categories – small businesses, education, recreation, utility and creativity. They are to be presented on a regular basis.

Software houses and distributors have already been invited to submit titles for evaluation by Atari and an outside examiner. Criteria for approval include quality, value for money and suitability to the machine. A licence fee is not being charged for the labels.

Atari has already decided on its first winners and one company which has fared extremely well in the listings is distributor Software Express.

The distributor's approved titles are Earthviews, The Factory, Paperclip, Syncalc, B-Graph, Action!, Basic XE, Bank Street Music Writer, Print Shop, Hitch Hiker's Guide, Kennedy Approach and Space Base, a number of which are American imports.

Ariolasoft was next in line with Seven Cities of Gold, a 130XE version of Paperclip and B-Graph.

Also included were Rescue from Fractulus and Ballblazer from Activision, Zorro and Kennedy Approach from US Gold, Microbase+ from Silicon and P-Forth from Bignose Software.

Atari have been commended on the approval scheme by Mike Rowlands-Jones of Software Express. "It is not only a good incentive for the software houses, but a great help to customers", he said.

"Customers usually have several titles of a similar nature to choose from. If they see a label of approval from the machine's manufacturer they at least know it must have something going for it".

"In the charts approval is given to a title because it is in the top ten that week. In three months it could be gone. I believe the titles which should be rewarded – and there are some out there – are the classics".

The approval scheme has already taken off in America and is working well, said Rowland-Jones. "And it will work here as long as it is not a five minute publicity gimmick. It needs publicising and for all software houses to become involved".

Computer links for churches

THE recently-formed Christian Micro Users Association has begun its work of linking together computer users of various denominations and promoting the use of micros in church activities.

Association secretary Philip Clark told *Atari User:* "There is a great need to discover and make contact with the individuals and companies producing 'Christian software'.

"We also need to share the expertise and ideas of the many who have sought to use micros in their church-related activities".

The aim of CMUA is to concentrate on the popular computers like the Atari and it has already unearthed a significant number of programs based on Bible studies.

The Association intends to produce a quarterly magazine called Christian Micro and, from next January, launch a series of tape magazines for specific micros.

Its other activities will include the formation of local groups.



Video digitiser launch

A VIDEO digitiser for the Atari 800, 800XL and 130XE has been produced by Stem Computing.

Called Computereyes, it has been adapted for the British and European PAL video standard from the original NTSC model designed and manufactured by Digital Vision in the USA.

Computereyes will digitise from any standard video source including video recorder and video disc.

Images are placed in the hi-res graphics area and can be saved to disc if desired. Special high contrast and grey-scale capture routines are included. The system costs £139.

Double challenge on the ST

TALENT Computer Systems is providing users of the 520ST with a double challenge in its latest release.

The single 3.5in disc includes two fast paced adventures – West and The Lost Kingdom of Zkul.

West acts as an introduction to the more demanding dungeons and dragons scenario of Zkul. The aim is to track down a notorious gang of bank robbers who have gone to ground in an abandoned mine in Indian territory.

There is gold to be collected, clues to be solved, and Indians, rattlesnakes and robbers' bullets to dodge in more than 130 locations.

Zkul is a classic and complex adventure with in excess of 200 locations and a huge vocabulary.

Users must find the last refuge of the dwarves, the Domed City, and the precious secret of the old civilisation.

It is a real time adventure with tasks to complete, puzzles to solve and mazes to negotiate.

The two-in-one disc costs £24.95.

Pascal for ST

FORTRAN 77 and Pascal are to be developed for the Atari ST by Prospero Software, which hopes to have the two language programs available at the end of this year.

PROTEUS ON ITS WAY

A SECRET software product with the code name Proteus is currently being developed at the London headquarters of Softek.

It is an intregrated suite of programs which has been designed, says the company, to sit on top of GEM.

"There has been nothing like it seen on the market before", says Tim Langdell of Softek. "We are convinced it will rival both Jazz and Symphony in its impact."



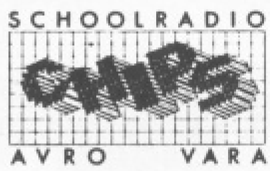
Dutch schools go for the 800XL

DUTCH children have begun to learn about computing, and the Atari 800XL is the machine chosen by the education authorities to do for Holland what the BBC Micro did for Britain.

A series of radio and television programs featuring the 800XL is being broadcast to Dutch elementary schools.

Its aim is to introduce youngsters to information technology and smooth the process of learning to use micros.

The project is being supervised by the Dutch school radio foundation SNS, a combination of the school radio services of AVRO and VARA, founded in 1951.



Other participants involved, apart from SNS and Atari, are the department of education at Amsterdam University and Wolters Software.

Atari Benelux sales and marketing manager Wilfred de Graaf says the project could lead to sales of more than 100,000 800XLs in Holland.

Pupils will learn the history of communication, how to use the 800XL, solving problems by computer, programming and other skills.

The SNS is encouraging pupils and teachers to develop their own software to add to the library of programs broadcast on the schools radio network for downloading on to cassette.

Two 15 minute television programs featuring the 800XL will be broadcast each week in the afternoon so that they can be watched during school lessons.

Mohawks take the Atari trail

BIG chief Jack Tramiel has come to the aid of the Mohawk Indians in Canada, the country where he had some of his earliest business successes.

The Atari boss presented the first of 10 520STs to band councillor Murray Maracle at the 1985 Computer Fair in Toronto.

The machines will be used for training at the First Nations Technical Institute, but their donation is of much greater value than that to the Indians.

For Atari has commissioned the Mohawks' educational arm to develop a syllabic fount for use in developing software in the many North American Indian languages.

The syllabic fount will be based on an alphabet of pictogram-like marks, or picture symbols, developed to represent words and phrases in the Indian tongues.

When the development work is done the Mohawks will become value added re-sellers for Atari, marketing the 520ST to native groups all over the North American continent.

The idea of developing a syllabic fount for use with the 520ST was discussed during meetings between the Mohawks and Atari Canada.

"Being good Canadians, and the Indians have been here long before us, we thought why don't we try to do something for them", says Atari Canada general manager Ian Kennedy.

"Then we spoke to Jack Tramiel about it and he thought it was a great idea and sanctioned the donation of the 10 machines for training and software development".

Enhanced Gem is forecast

A MAJOR row between the Apple Corporation and Digital Research has been settled in such a way that Atari may emerge as the eventual winner.

Digital Research has agreed to pay Apple an undisclosed sum and amend its Gem programs to avoid any possible infringement of copyright.

It is these programs that are being offered with the new ST range of micros.

One result of the compromise settlement is that new versions of Gem are to be produced, "designed to be substantially different to Apple's Macintosh personal computer in both screen appearance and operation".

This is viewed by the industry as a move by Apple to counteract Gem providing the ST with a Macintosh type environment. For this had already earned the Atari machine – some half the price of the Mac – its nickname of the Jackintosh.

However Max Bambridge, Atari UK's boss, seemed unperturbed by the news when it was broken to him by *Atari User*.

"As this involves an agreement with which we are not directly involved, it is really nothing to do with us", he said.

"But it would seem safe to say that if the Gem packages available for the ST have to be changed they will naturally be improved.

"And this may well mean that the ST will be able to score even more heavily against the Macintosh".

Meanwhile Apple has disclosed that it has pressurised Digital Research to take immediate action in the modification of three specific programs – Gem Desktop, Gem Paint and Gem Draw.

However until the new versions of these become available, the current ones – available for the ST – will still be marketed.

Digital Research has given the assurance that all its present range of programs for the ST will operate in any future Gem environment.

MicroLink
in association with
TELECOM GOLD

No. 3 November 1985

NEWSLETTER

MESSAGES THAT ARRIVE BEFORE THEY ARE SENT...

BELIEVE it or not – but MicroLink's subscribers in Australia can have a Telemessage delivered in England before they actually send it!

This feat of telecomputing wizardry is made possible by the speed of MicroLink's electronic mail service and the ten hour time difference between the UK and Australia's east coast.

Say, for instance, MicroLink subscriber Ned Kelly is waiting for his morning billy to boil in Sydney when he remembers with horror that it's the birthday of Liza Doolittle, the sheila he met on holiday in Earls Court, and he hasn't sent a card.

It's 5.30am Tuesday – which is 7.30 Monday evening at MicroLink's nerve centre, and half an hour before the deadline for guaranteed next day delivery of Telemessages.

Ned hastily scribbles out a few affectionate words and soon has the greeting safely transmitted to MicroLink, from where it is passed on to Liza's local delivery office.

In common with her fellow market flower sellers, Liza gets her mail very early . . . so Ned's birthday greeting arrives on a colourful Telemessage card at 5.15 Tuesday morning – half an hour before he transmitted it to MicroLink.

Even better news for Ned – because Australia is on the International PacketSwitch-Stream network he is able to shoot his message across 10,500 miles for the equivalent of about 15p. The MicroLink Telemessage itself costs him £1.95, plus 65p for the fancy greeting card.

So Ned's long distance romance with Liza is saved for less than £2.

System speeds up

SENDING a telex message overseas via MicroLink is now easier and faster.

Previously when a system user was asked "Tlx, Key plus or Code?" he had to access an alphabetical list of countries and read through it to get the appropriate code number of the country he was sending to.

Now he can just type in the name of the country, telex number, and the answer back code where appropriate, and press Return before typing in the text of the message he wants to send.

Church keeps in touch by telex

A MICROLINK member with a mission is Colonel K.A. Christian, who until his retirement was head of telegraph and data systems at British Telecom headquarters.

As secretary to the Deanery of Clare in the Diocese of Bury St. Edmunds and Ipswich he uses his Tandy Model 1 and Miracle Modem as often as possible to communicate by electronic mail and telex with other church officials.

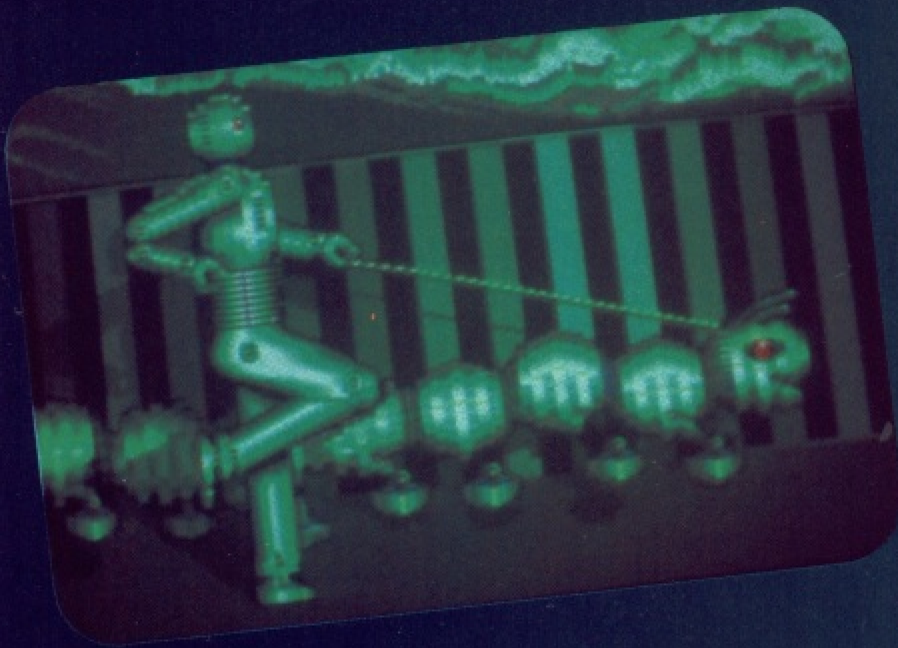
And he is also a member of the Church Computer User Group, whose patron is the Archbishop of York and whose aim is to spread the gospel of high tech among church administrators.

A prime target for a telecomputing baptism is his Rural Dean, the Rev Andrew Haig, who has a Commodore 64 but hasn't yet got a modem.

"I'm hoping he'll obtain one very soon", says Col. Christian. "I can contact our Deanery Treasurer's Apple II via Prestel and I can use MicroLink's telex facility to communicate with the Diocesan Registrar.

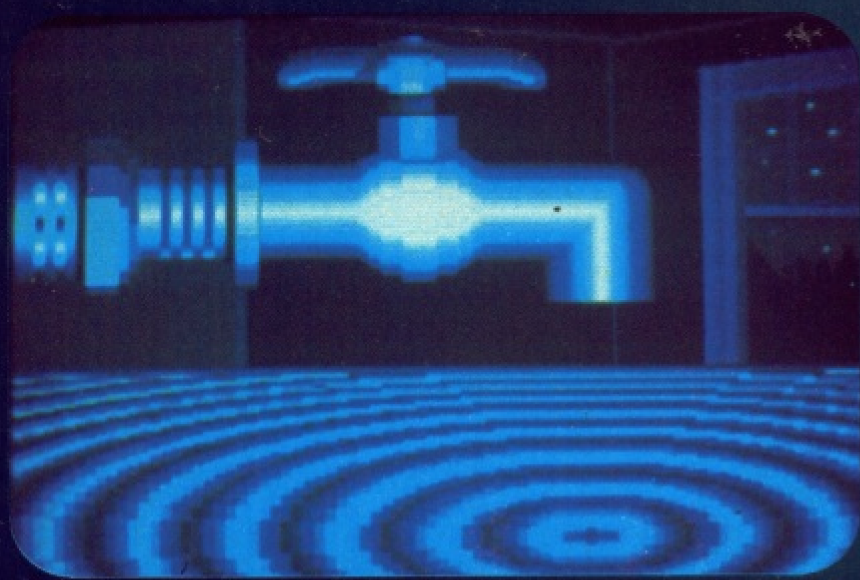
"What would really please me is for them all to be linked by the electronic mail service so we could show how telecomputing can help church administrators function more efficiently".

YOUR chance to join MicroLink – turn to Page 31









ST colour magic

THE 520ST sitting in the *Atari User* office has obviously been the centre of attention recently. However, it was almost the scene of tears a few days ago when three demonstration discs for the 520ST arrived from America.

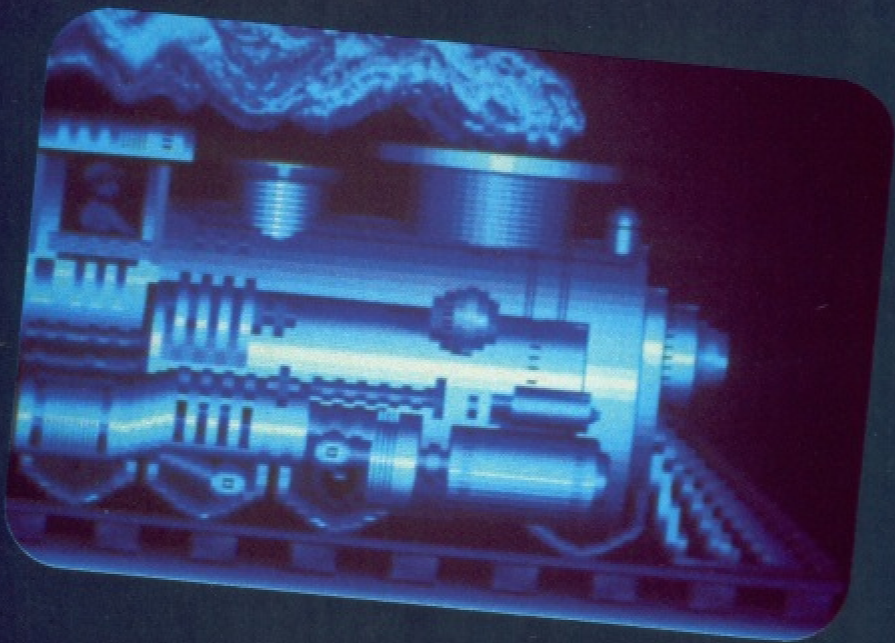
Tears of elation, then? Not so for the package had been damaged in the post. Fortunately, the story has a happy ending. Despite the ramblings of the Director of Mail Processing in San Francisco on how ''insecurely enveloped'' mail could cause their machinery to jam, the three discs had survived intact.

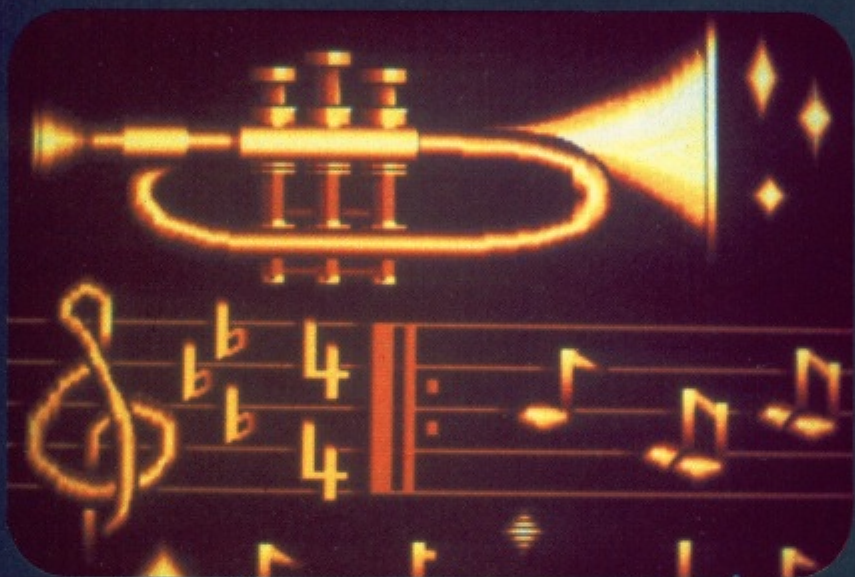
The collective editorial sigh of relief was heard several offices away.

The monochrome pictures in the ''slide show'' demos were pretty impressive, but when we hooked up a colour monitor – kindly rushed to us by Silica Shop – everybody gaped in amazement. The quality is so good that we've reprinted them here. If you think they look good, you should see them in real life.

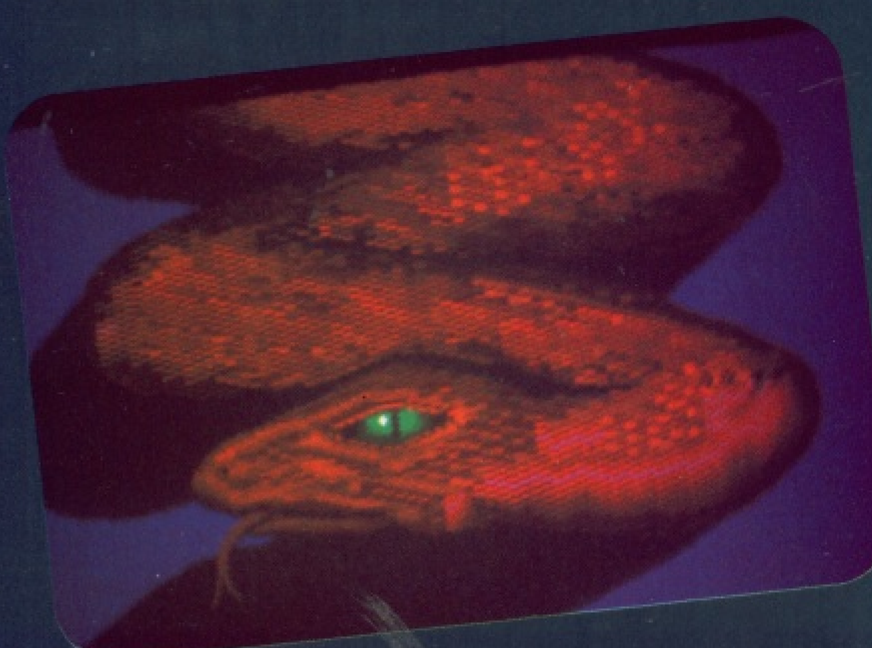




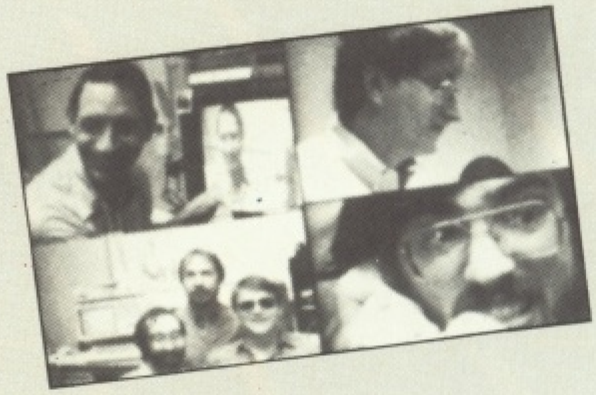


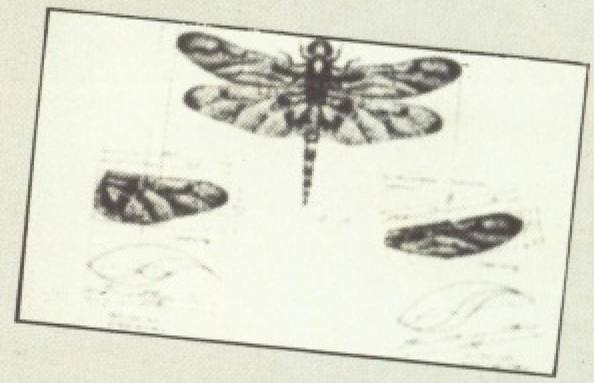




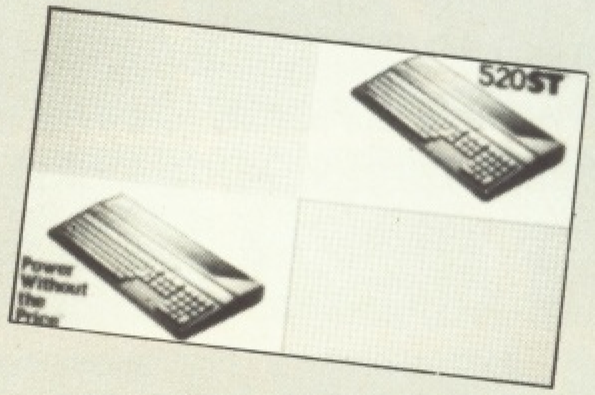


The 520 ST's black and white performance is superb, too











The complete list of pioneering programs

ST software

- What's being written
- Who's producing it
- When it's available

Company	Product	Expected availability date
COMMUNICATIONS SOFTWARE		
Haba Systems	Habacom	Now
Kuma Computers	K-Comm	Now
Mark of the Unicorn	PC/Intercomm	Now
Michtron	MI-Term	Nov 85
Miracle Technology	Ascii/Prestel Comms	Dec 85
Softworks	Ascii/Prestel Comms	Jan 86
Software Punch	Local Area Network	Now
SST Systems	Chat	Now
PERSONAL AND HOME FINANCE		
Haba Systems	Checkminder	Now
Micro End Inc	Home Accountant	Now
CREATIVE SOFTWARE		
Island Logic	The Music System	Jan 86
Mirrorsoft	Fleet Street Editor	Feb 86
ENTERTAINMENT SOFTWARE		
Bluechip Software	Baron	Dec 85
Bluechip Software	Tycoon	Dec 85
Bluechip Software	Millionaire	Dec 85
English Software	Hyperdrive	Nov 85
Firebird Software	Starglider	Dec 85
FTL/Oasis	Sundog – the Frozen Legacy	Now
Infocom	A Mind Forever Voyaging	Now
Infocom	Deadline	Now
Infocom	Suspect	Now
Infocom	Wishbringer	Now
Infocom	Hitch Hikers Guide to the Galaxy	Now
Infocom	Zork I	Now
Infocom	Zork II	Now
Infocom	Starcross	Now
Infocom	Cut Throats	Now
Infocom	Sorcerer	Now
Infocom	Enchanter	Now
Infocom	Infidel	Now
Infocom	Planetfall	Now
Infocom	Seastalker	Now
Infocom	Witness	Now
Infocom	Suspended	Now
Infocom	Zork III	Now
Intelligent Software	Three Dimensional Chess	Dec 85
Island Logic	Polyscan	Jan 86
Llamasoft	Colourspace	Nov 85
Mark of the Unicorn	Hex	Now
Michtron	Flip Side	Now
Michtron	Goldrunner	Nov 85
Michtron	Mud Pies	Now
Michtron	Flight Simulator	Now
Microdeal	Lands of Havoc	Now
Paradox Software	Caverns	Now
Penguin	Pensate	Now
Penguin	Transylvania	Now
Penguin	Xyphus	Now
Penguin	Crimson Crown	Now
Sierra On Line	Ultima II	Now
Sierra On Line	Kings Quest	Now
Sublogic	Flight Simulator II	Now
Sublogic	Jet	Now
Talent	The Lost Land of Zkul & West	Now

Company	Product	Expected availability date
WORD PROCESSING		
BOS	Boswriter	Now
Digital Research	Gemwrite	Now
Fydler	Mailmate	Now
Fydler	Spellmate	Nov 85
Fydler	Wordmate	Nov 85
Haba Systems	Haba Letters	Now
Haba Systems	Habaword	TBA
Kuma Computers	K-Word	Now
Mark of the Unicorn	Mince Editor	Now
Metacomco	ED	Now
Mirage	Express Letter Processor	Now
Precision Software	Superscript	Jan 86
SM Software	Word Processor	TBA
SM Software	Spelling Checker	TBA
DATABASE		
BOS	Autoclerk	Now
BOS	Autoindex	Now
Databench	Optimum	TBA
Fydler	Datastate	Nov 85
Kuma Computers	K-Data	Now
Lasersoft	Laserbase	TBA
Precision Software	Superbase	Jan 86
SM Software	Filemanager	TBA
Stoneware	DB Master	Now
Talent	FlexFile	Jan 86
SPREADSHEET		
BOS	Bosplanner	Now
Haba Systems	Habacalc	TBA

4

Company	Product	Expected availability date
Kuma Computers	K-Spread	Now
Mosaic	Twin	Now
SM Software	Spreadsheet	TBA
VIP	The Professional	Now

BUSINESS GRAPHICS

Company	Product	Expected availability date
Digital Research	Gemdraw	Now
Digital Research	Gempaint	Now
Fydler	Mastergraph	Nov 85
Rising Star	Cadcam	Dec 85

OFFICE MANAGEMENT

Company	Product	Expected availability date
Fydler	Appointmaster	Now
Haba Systems	Haba Dialer	Now
Haba Systems	Haba Window Dialer	Now
Haba Systems	Haba Dem	Now
Haba Systems	Haba Window Calculator	Now

MISCELLANEOUS MANAGEMENT

Company	Product	Expected availability date
Batteries Included	Degas	Now
Datacode Systems	Project Leader	TBA
Mosaic	Integrated-7	Jan 86
Paradox Software	Desk Diary	Now
Planner	Project Manager	TBA
Rising Star	Valdocs II	Nov 85
Softechnics	Timelink	Now

VERTICAL APPLICATION

Company	Product	Expected availability date
Execon Software	Taurus Printers Package	Nov 85
Fydler	Administrator	Now
Whitendale	Wasp Insurance Brokers	Now
Whitendale	Wasp Printers Estimating	Now
Whitendale	Wasp Accountants Diary System	Now
Whitendale	Wasp Membership Accounting	Now
Whitendale	Wasp Incomplete Records	Now
Whitendale	Wasp Accountants Time Recording	Now
Whitendale	Wasp Legal Accounting	Now
Whitendale	Wasp Legal Diary System	Now
Whitendale	Wasp Time Recording	Now

ACCOUNTING

Company	Product	Expected availability date
BOS	Fixed Assets	Now
BOS	Inventory Control	Now
BOS	Invoicing	Now
BOS	Negotiator	Now
BOS	Nominal Ledger	Now
BOS	Payroll	Now
BOS	Purchase Ledger	Now
BOS	Sales Ledger	Now
BOS	Sales Order Processing	Now
BOS	Small Business Accounts	TBA
Cheltek Systems	Sales/Purchase/Nominal Ledgers	Nov 85
Chipsoft	Taurus Stock Control	Nov 85
Execon Software	Taurus Invoicing	Nov 85
Execon Software	Taurus Accounts	Nov 85
Execon Software	Cash Trader	Dec 85
Quest International	Sales/Debtors Ledger	TBA
Quest International	Stock Control System	TBA
Quest International		

Company	Product	Expected availability date
Quest International	Purchase/Creditors Ledger	TBA
Quest International	Nominal/General Ledger	TBA
Quest International	Sales Invoicing	TBA
Supplemental	2-Key Accounting	Now
Towngate Software	Cash Manager	Now

EDUCATION

Company	Product	Expected availability date
Academy	Typing Tutor	Now
Deltron	Home Planetarium	Nov 85
Scarborough	Master Type	TBA

OPERATING SYSTEM

Company	Product	Expected availability date
BOS	BOS/5 Operating System	Now
GST Systems	CP/M 2.2 Emulator	TBA

UTILITY SOFTWARE

Company	Product	Expected availability date
Michtron	IBM Ascii File Transfer	Now
Michtron	M/Disk	Now
Michtron	Soft Spool	Now

DESKTOP ACCESSORIES

Company	Product	Expected availability date
Atarisoft	Breakout	Now
Digital Research	Calculator	Now
Softechnics	Rhythm	Now

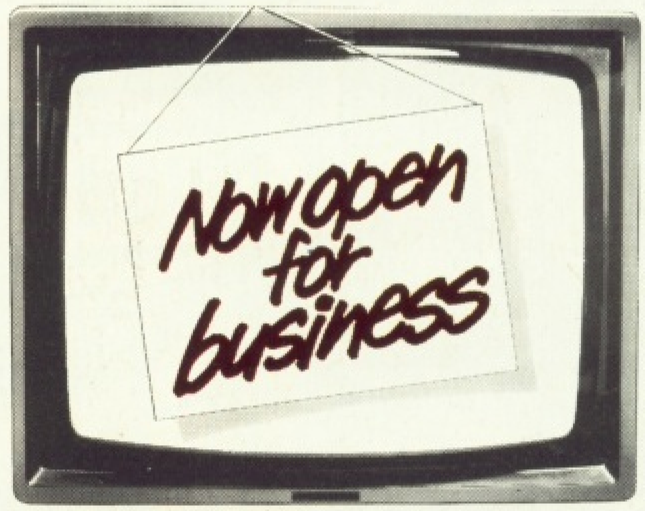
PROGRAMMING LANGUAGE

Company	Product	Expected availability date
Atarisoft	Basic Compiler	TBA
BOS	Microcobol Compiler	Now
BTMSoft	Basic Interpreter	Dec 86
Computer One	Assembler/Monitor	Now
Computer One	C Compiler	Nov 85
Computer One	Pascal	Dec 85
Computer One	Forth	TBA
Digital Research	ST Basic	Now
Digital Research	ST Logo	Now
Dragon Group	Forth Accelerator	TBA
Dragon Group	4 x Forth Level 1	Now
Dragon Group	4 x Forth Level 2	Now
GST Systems	C Compiler	Now
GST Systems	Macro Assembler/Monitor	Now
Haba Systems	Hippo C Compiler	Now
Hisoft	Pascal Compiler	TBA
Hisoft	C Compiler	TBA
Hisoft	Devpac	Now
Kuma Computers	K-Seka	Now
Metacomco	Assembler/Monitor	Now
Metacomco	Lisp	Now
Metacomco	C Compiler	Now
Metacomco	Pascal Compiler	Now
Philon	Basic Interpreter	Now
Philon	Basic Compiler	Now
Philon	Pascal Compiler	Now
Philon	Cobol	Now
Philon	C Compiler	Now
Prospero Software	Fortran-77	Dec 85
Prospero Software	ISO Pascal	Nov 85
TDI	Modula-2	Now
TDI	P-System	Now

Maybe it's fun to you – but it's £6 an hour to your wife!

The Computer that's been giving you such a fine time with computer games is now ready to earn you some real money. Helping you to run your own business or giving your wife the chance to earn £6 or more an hour for word processing/secretarial work.

All because of the brilliant new word processing package, SuperScript from MicroPro – the makers of Wordstar – the world's best selling word processing packages for microcomputers.



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Each command is a single word, and for each command you simply move the cursor. You don't even have to type the command.

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SuperScript's complete set of calculator functions can be used interactively or you can operate on numbers from the text of your document. Apart from the usual mathematical functions like add, subtract, multiply, divide, and percentages, you have the ability to add rows, columns or even whole tables.

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Editing options SuperScript gives you all the editing options of a business-style word processor, with full block manipulation for cut-and-paste; overtype or text insertion modes; search and replace with pattern matching and optional case discrimination; backward search, case shifts for single words or larger blocks of text. And much more.

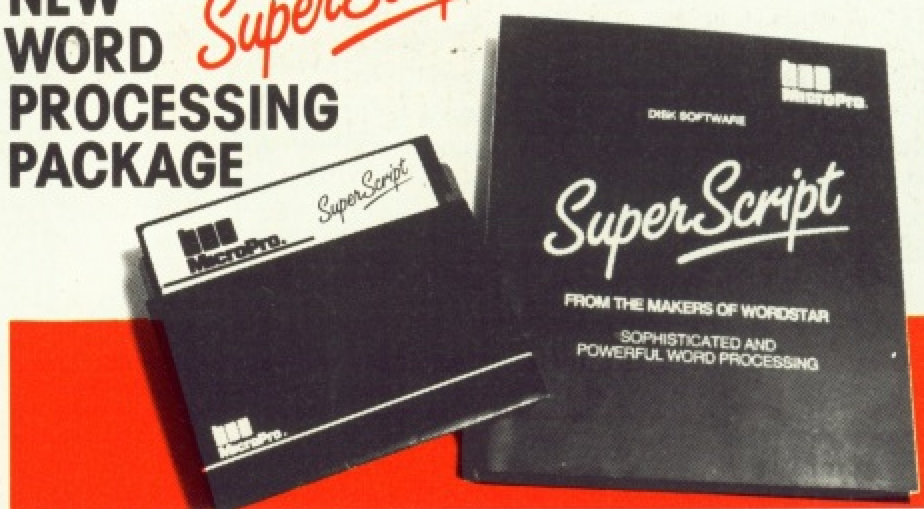
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QTY [ ] †Upgrade for Easy Script £49.95 (includes P&P) for* ______________ computer
†(Your existing Easy Script disk should be returned with this order.) *Commodore 64, 128. Atari 800XL, 130XE. Apple IIc, IIe

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Name ______________
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If you are intending to use SuperScript for a specific purpose, we should be interested to have details. Thank You ______________

Gunpowder, Treason and Plot!



IT'S November 5th and the plot to blow up the Houses of Parliament has been foiled. Guy Fawkes has been discovered in the basement with a barrel of gunpowder, just about to light the fuse.

He's on the run now and the guards are hot on his tail. Every way he turns there seem to be more and more guards. Can you help him escape?

All he's got is the spade he used to dig his way into the basement. He can use this to dig holes in the floors.

With a bit of luck the guards won't see these and will fall into them. But be careful though. If you fall down one of the holes yourself you've had it.

Guy Fawkes is a fast ladders and levels game with 15 screens. There's a catchy tune to accompany the title page and instructions.

The screen is stored as data statements starting at line 5163 and the layout can be changed by changing the data.

You could also add another set and randomly select one or the other for variety if you're feeling adventurous.

A seasonal fast ladders and levels game by ROLAND WADDILOVE

VARIABLES

LIVES	Lives left.
SCREEN	Screen.
A(19,23)	A copy of the screen.
B(30,1)	The coordinates of the guards.
D(30)	Whether the guards are alive or dead.
X,Y	Your coordinates.
S	The start of screen RAM.
OK	Whether you are dead or alive.
L	Number of guards left.



```
10 REM Guy Fawkes
20 REM By R.A.Waddilove
30 REM (c) Atari User
33 REM Written on Atari 800 XL
35 POKE 106,PEEK(106)-4:GRAPHICS 0
37 ? :? "Thinking..."
40 GOSUB 9000:REM Initialise
50 GOSUB 8500:REM Instructions
100 LIVES=3:SCREEN=1
150 GOSUB 5000:REM Screen
160 GOSUB 6000:REM Start
200 GOSUB 1010:GOSUB 1505
300 IF OK AND L THEN 200
310 IF OK THEN SCREEN=SCREEN+1
320 IF  NOT OK THEN GOSUB 7000
330 IF LIVES THEN 150
350 GOSUB 4500:REM Rating
400 GOTO 100:REM Another game
500 END
1000 REM ------ Move Man --------
1010 P=S+X+Y*20:IF A(X,Y)=4 OR PEEK(P)
<>133 THEN OK=0:RETURN
1015 IF A(X,Y+1)=4 THEN I=X:J=Y+1:GOTO
 1070
1020 IF STRIG(0)=0 AND D THEN A(X+D,Y+
1)=4:POKE P+D+20,0:RETURN
1060 JOY=STICK(0):I=X-(JOY=11)+(JOY=7)
:J=Y-(JOY=14)+(JOY=13):IF J<0 THEN J=Y
1061 IF I<0 OR I>19 THEN I=X
1065 IF A(I,J)<2 OR (I=X AND J=Y) THEN
 RETURN
1070 SOUND 0,60,10,8:Q=S+I+J*20:IF PEE
K(Q)=68 THEN OK=0
1090 POKE P,194*(A(X,Y)=2):POKE Q,133:
D=I-X:X=I:Y=J:SOUND 0,0,0,0:RETURN
1500 REM ----- Move Guards -----
1505 SOUND 1,193,10,4:N=N+1:IF N=SCREE
N*2 THEN N=0
1515 P=B(N,0):Q=B(N,1):IF D(N) THEN RE
TURN
1530 IF A(P,Q)=4 THEN D(N)=1:POKE S+P+
Q*20,0:L=L-1:RETURN
```

Game



```
1540 IF A(P,Q+1)=4 THEN BX=P:BY=Q+1:GO
TO 1610
1560 BX=P+(X>P)-(X<P):IF A(BX,Q)<2 THE
N BX=P
1580 BY=Q+(Y>Q)-(Y<Q):IF A(BX,BY)<2 TH
EN BY=Q
1610 POKE S+P+Q*20,194*(A(P,Q)=2):POKE
 S+BX+BY*20,68:B(N,0)=BX:B(N,1)=BY
1700 SOUND 1,0,0,0:RETURN
4500 REM ----- Rating ----------
4505 FOR I=0 TO 3:SOUND I,0,0,0:NEXT I
4530 GRAPHICS 0:SETCOLOR 2,0,0:POKE 75
5,0
4600 RESTORE 4700:FOR I=1 TO SCREEN:RE
AD M$:NEXT I
4610 ? :? :? :? "          R A T I N G
"
4620 ? :? :? :? "     ";M$
4640 ? :? :? :? "   Press Fire for ano
ther game..."
4650 GOSUB 8000
4700 DATA ***** Abysmal ******,***** V
ery poor ****,*** Not very good **,***
 satisfactory ***
4710 DATA ******** OK ********,******
Not bad *****,**** Quite good ****,***
* Very Good *****
4720 DATA ***** Fantastic ****,***** W
 O W !!! ****,***** Amazing! *****, **
**** A C E ******
4800 RETURN
5000 REM ----- Screen --------
5005 FOR I=0 TO 3:SOUND I,0,0,0:NEXT I
5010 GRAPHICS 17:POKE 756,PEEK(106)
5020 SETCOLOR 0,3,6:SETCOLOR 1,7,8:SET
COLOR 2,12,8:SETCOLOR 3,13,12
5040 POKE 755,0:RESTORE 5163:POKE 77,0
5045 S=PEEK(88)+256*PEEK(89):X=5
5050 FOR J=0 TO 21
5060 READ M$
5070 FOR I=0 TO 19
5075 T$=M$(I+1)
5080 IF T$="*" THEN A(I,J)=3
5090 IF T$="." THEN A(I,J)=0
5100 IF T$="H" THEN A(I,J)=2:POKE X,19
4
5110 IF T$="=" THEN A(I,J)=1:POKE X,1
5120 X=X+1
5150 NEXT I
5160 NEXT J
5161 RETURN
5163 DATA .H******H********H*.
5164 DATA .H======H========H=.
5165 DATA .H......H........H..
5166 DATA .H......H........H..
5170 DATA *H***H*****H*******H
5180 DATA =====H=====H=======H
5190 DATA .....H.....H.......H
5200 DATA .....H.....H.......H
5210 DATA .*H*H*******H*H****H
5220 DATA .=H============H====
5230 DATA ..H............H....
5240 DATA ..H............H....
5250 DATA **H*H****H*******H**
5260 DATA ====H====H=======H==
5270 DATA ....H....H.......H..
5280 DATA ....H....H.......H..
5290 DATA *H**H****H*******H*.
5300 DATA =H=======H====H====.
5310 DATA .H.......H....H.....
5320 DATA .H.......H....H.....
5340 DATA .H*******H****H*****
5350 DATA .===================
6000 REM ------- Start --------
6010 X=10:Y=20:POKE S+X+Y*20,133
6020 FOR I=0 TO SCREEN*2-1
6025 D(I)=0
6030 B(I,0)=1+INT(RND(1)*18)
6035 B(I,1)=INT(5*RND(1))*4
6040 POKE S+B(I,0)+20*B(I,1),68
6045 NEXT I
6050 L=I
6100 POSITION 0,23:? #6;"lives:";LIVES
;:POSITION 10,23:? #6;"screen:";SCREEN
;
6150 OK=1:N=0
6200 RETURN
7000 REM ------ Caught ------
7010 LIVES=LIVES-1:POKE S+X+Y*20,133
7030 SOUND 1,0,0,0:SOUND 2,0,0,0:SOUND
 3,0,0,0
7040 FOR I=100 TO 255 STEP 2
7050 SOUND 0,I,10,4:SOUND 1,I/2,10,3:S
OUND 2,I/4,10,2:SOUND 3,300-I,10,1
7060 NEXT I
7200 RETURN
8000 REM ---------- Tune ---------
8040 J=1:SOUND 2,193,10,3
8050 RESTORE P(J):SOUND 1,C(J),10,4:IF
 J=9 THEN J=0
8070 READ I:IF I=0 THEN J=J+1:GOTO 805
0
8080 SOUND 0,I,10,10
8100 IF PEEK(20)<6 THEN 8100
8110 POKE 20,0:IF STRIG(0) THEN 8070
8120 RETURN
8200 DATA 85,96,76,96,72,96,64,96,57,9
6,50,96,47,96,50,96,47,96,47,50,57,47,
50,57,47,50,57,47,47,47,0
8220 DATA 47,50,47,50,57,50,57,64,57,5
0,57,50,47,50,47,0
8240 DATA 64,57,72,64,76,72,85,76,96,8
5,96,102,114,128,144,153,173,193,173,1
53,144,128,114,102,153,144,128,114
8250 DATA 102,96,0
8500 REM ----- Instructions -----
8510 GRAPHICS 2:POKE 755,0
8515 SETCOLOR 2,3,0:SETCOLOR 4,3,0:SET
COLOR 0,13,12
8520 POSITION 5,4:? #6;"GUY FAWKES"
8565 ? "              Atari  User"
8570 ? :? :? "           Press Fire But
ton";
8575 GOSUB 8000
8580 GRAPHICS 0:SETCOLOR 2,8,0:SETCOLO
R 4,8,6:POKE 755,0
8585 POSITION 9,2:? "G U Y    F A W K
E S"
8590 ? :? :? "The plot to blow up the
houses of     parliament has been foil
ed and the"
8600 ? "guards are hot on the trail of
 Guy    Fawkes. Can you help him escap
e?"
8610 ? :? "The guards can be disposed
of by      digging a hole in their pat
h. Don't   fall in yourself though!"
8620 ? :? "Pressing the fire button di
gs a hole  in front of you so watch ou
t."
8640 ? :? :? :? "Press Fire button..."
8700 GOSUB 8000
8800 RETURN
9000 REM ----- Initialise -----
9005 POKE 755,0
9010 RESTORE 9080
9020 DIM M$(20),A(19,23),P(9),C(9),T$(
1),B(30,1),D(30)
9040 FOR I=1 TO 9:READ J:P(I)=J:READ J
:C(I)=J:NEXT I
9080 DATA 8200,173,8200,173,8220,230,8
220,230,8200,173,8200,173,8220,230,822
0,230,8240,128
9085 ? :? "Got to concentrate..."
9090 K=PEEK(106)*256:FOR I=47 TO 1023:
POKE K+I,PEEK(57344+I):NEXT I
9095 ? :? "Whew!..."
9194 FOR I=0 TO 47:READ J:POKE K+I,J:N
EXT I
9200 RETURN
9500 REM Character data
9505 DATA 0,0,0,0,0,0,0,0
9510 DATA 251,251,251,251,0,223,223,22
3
9520 DATA 66,126,66,66,66,126,66,66
9530 DATA 0,0,0,0,0,0,0,0
9540 DATA 16,56,16,124,254,186,40,108
9550 DATA 16,56,16,124,186,56,40,108
```

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50 prizes in our great free competition



Win one of 50 copies of Chop Suey, the latest, greatest test of skill in the art of Kung-Fu

THIS month we're giving away 50 copies of Chop Suey, the great new Kung-Fu game, courtesy of English Software.

All you have to do is study the word square below and find as many names of Far Eastern countries as you can.

Then send the coupon back to us with the names neatly circled.

We also want you to tell us how many you discovered – we're not telling you how many there are, but it's in double figures!

Closing date for the competition is November 30 and the winners will be the first 50 correct entries picked out of the editorial hat.

It's not too hard, so why not enter? Remember, there are 50 chances of winning, so give it a try.

Chop Suey competition

Name ____________________

____

Address ____________________

____

____

____

____

Number of names found

[ ]

Return by November 30, 1985 to Chop Suey Contest, *Atari User*, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Z	Y	A	A	M	Z	E	Z	B	N	A	I	T	W	N	A	E	A	O	N
T	Y	G	F	O	E	N	R	O	B	Q	N	L	A	X	Z	N	Z	H	G
I	D	L	A	E	M	L	R	B	I	S	P	V	R	W	K	Z	S	Z	T
M	T	X	E	F	R	Z	A	R	M	X	R	G	K	A	V	A	J	N	O
O	Z	C	Z	B	N	N	R	B	W	A	M	N	F	E	R	N	I	O	I
R	N	P	G	U	E	C	E	U	E	M	L	S	T	A	V	I	T	I	S
G	R	P	R	R	B	C	D	Y	G	Y	I	A	H	C	I	H	A	Y	N
N	F	U	Y	M	B	T	T	N	M	E	K	G	Y	N	Z	C	P	Z	H
Z	G	G	C	A	E	F	V	A	A	E	T	I	X	A	E	G	E	G	L
M	C	V	N	A	P	A	J	N	B	L	A	F	Z	Q	H	D	S	G	R
S	L	U	M	V	M	E	K	E	Z	I	I	A	B	A	S	H	M	D	Q
A	W	U	K	A	Y	W	H	V	T	L	W	A	I	X	X	I	R	B	F
T	I	A	R	T	A	M	U	S	H	M	A	Y	H	L	Q	G	Y	Q	A
V	I	J	N	C	U	M	H	L	U	I	N	S	Q	T	O	O	E	D	I
A	K	E	C	G	P	Z	K	R	Q	Q	F	E	Q	K	B	G	H	A	D
E	G	S	M	G	Y	F	V	F	V	O	Q	X	C	G	Q	A	N	T	O
R	B	G	O	I	G	W	N	E	J	O	H	B	X	B	V	Y	I	O	B
O	F	X	M	A	Z	W	A	V	I	E	T	N	A	M	N	M	B	B	M
K	O	T	O	M	L	R	X	S	T	V	A	M	F	Z	V	T	P	V	A
M	Y	D	G	I	W	I	I	P	H	D	U	N	A	F	Y	J	A	C	C

YOU CAN GET STUNNING 3D GRAPHICS FROM ONLY ONE COLOUR

Part Seven of DAVE RUSSELL's series on Atari graphics modes

SO far in this series we've looked at Modes 0 to 8. If you have one of the older Atari 400s or 800s that's as far as you can go. This month's article assumes that your machine has a particular chip which some early models lacked.

The chip in question is referred to as GTIA, or Graphics Television Interface Adaptor, and its predecessor was referred to as CTIA. Unless you've had your machine since 1981, the chances are that it contains the GTIA.

If you *have* got an old machine and don't know which chip it contains, try entering Program I, a simple routine which cycles through colours and luminances.

If you do have the GTIA the whole of your television screen will cycle through the colours because the border and background are indistinguishable. However if your machine contains the earlier CTIA the border will be a different colour from the background and so will be visible. Press Break or Reset to stop the program.

Assuming that you're still with me then, I'll take a look at modes 9, 10 and 11. You can access these in the same way as the other modes we've considered, using the Graphics command.

Press Reset to get an empty Mode 0 screen with the Ready prompt at the top. Now type:

GRAPHICS 9

and press Return. The brief flash you'll see is Mode 9, but once the command has been executed the system reverts to Mode 0. If you want to see Mode 9 you've got to keep it there somehow.

In fact we saw the method used last month to keep a full-screen Mode 8. All that's involved is putting the system into a never-ending loop. With a program you can simply use a line which GOTOs to itself. For example:

```
10 GRAPHICS 9
20 GOTO 20
```

In immediate execution mode you can use the FOR . . . NEXT construction to create an endless loop. For example, type:

```
FOR A=1 TO 2 STEP 0:
GRAPHICS 9:NEXT A
```

and press Return. The fact that we've used a step size of 0 means that A never reaches its upper limit so the loop goes on forever.

The blank screen which confronts you is Mode 9. Unfortunately there's not much you can do with it in this state. The machine is locked in the loop and so most of the keys produce no response.

You can Break out of it, though, or Reset the machine.

Modes 9, 10 and 11 all have the same resolution of 192 rows × 80 columns with no possibility of a useful text window unless you're prepared to use a display list interrupt and/or redefine the character set.

If you've been following Mike Rowe's series in *Atari User* you'll know what to do, but for now I'll assume that these modes don't have any text capabilities.

You *can* produce a Mode 9 screen with a separate window at the bottom very easily. Simply type GRAPHICS 8 and then POKE 623,64. However if you try this you'll soon see why I used the phrase "useful text window" earlier.

In Mode 9 you can only use one colour, but you can have up to 16 luminances of that colour on the screen. Mode 11 is the opposite, with 16 available colours but only one luminance.

Mode 10 is a bit different in that it allows one background and eight foreground colours. However using these colours from Basic is not as simple as for the other two modes, so we'll leave Mode 10 until the end.

In Modes 9 and 11 we use a combination of SETCOLOR and COLOR commands. Only colour register 4 is used, so in Mode 9 the

```
10 GRAPHICS 9
20 FOR C=0 TO 15
30 FOR L=0 TO 16
40 SETCOLOR 4,C,L
50 FOR DELAY=1 TO 50:NEXT DELAY
60 NEXT L
70 NEXT C
80 GOTO 20
```

Program I

→

colour is selected with:

SETCOLOR 4,colour,0

while in Mode 11 the luminance is selected with:

SETCOLOR 4,0,luminance

In Mode 9 the COLOR command is used to select one of the 16 levels of luminance, while in Mode 11 the same command is used to select one of the 16 colours.

To see the difference between the two modes type in Program II and run it. This produces a simple Mode 9 starburst pattern which cycles through the colours and luminances. When you've had enough of that Break out and list the program. To convert it to Mode 11 we need to change lines 10 and 30.

Alter line 10 to read:

10 GRAPHICS 11:C=0

and alter line 30 to read:

30 SETCOLOR 4,0,C

If you now run the program you should see the same starburst pattern but in a multi-coloured single-luminance form rather than the single-coloured multi-luminance Mode 9 version.

```
10 GRAPHICS 9:C=0
20 C=C+1:IF C>15 THEN C=0
30 SETCOLOR 4,C,0
40 FOR X=0 TO 15
50 RX=INT(RND(0)*80):RY=INT(RND(0)*190)
60 COLOR X
70 PLOT 40,95
80 DRAWTO RX,RY
90 NEXT X
100 GOTO 20
```

Program II

You might think that having only one colour available, as in Mode 9, is a severe limitation on what you can display. However the fact that you can have 16 luminances means that you can produce some stunning 3D graphics.

Rather than tax my brain to produce an example of such a display, Program III does the job admirably. It was sent in to the *Atari User* offices by Dean Rossiter, of Wellingborough.

If you fancy a different colour you'll need to alter line 10. As usual, a well-placed loop will cause the program to cycle through all the colours.

To see the sort of colourful effect that Mode 11 can give, enter and run Program IV. Its squashed appearance illustrates the pixel shape in these modes. With more rows than columns, pixels are long and thin.

Mode 10 allows nine independent colours, each with its own luminance, but there aren't nine colour registers, are there? Certainly the SETCOLOR command can only be used to access registers 0 to 4.

This is the problem with colour selection in Mode 10. Some of the registers *can* be accessed via SETCOLOR but the others must have the appropriate value POKEd in.

Rather than try to mix the two



methods, I recommend that when using Mode 10 you always POKE the colour registers. Of the two methods this is the only one which can be used on all the registers, and so is simpler.

To be accurate, we don't actually poke the registers themselves. Rather, we poke their "shadows" in RAM. However this is a detail which we need not take any further here.

The locations which contain the colour information are 704 to 712. These locations correspond to the commands COLOR 0 to COLOR 8 respectively.

The value which is poked into the register needs to contain not only the

```
5 REM ***    PENCILS    ***
6 REM ***      By       ***
7 REM ***Dean Rossiter***
10 GRAPHICS 9:SETCOLOR 4,2,0
20 LX=13:RX=55:Y=48:PX=67:PY=60
30 GOSUB 1000:REM ***Pencil 1***
40 LX=13:RX=55:Y=78:PX=67:PY=90
50 GOSUB 1000:REM ***Pencil 2***
60 LX=10:RX=52:Y=64:PX=64:PY=76
70 GOSUB 1000:REM ***Pencil 3***
80 POKE 77,0:GOTO 80
1000 REM *** Main Routine ***
1001 A=Y:FOR T=2 TO 14:COLOR T
1002 PLOT LX,Y:DRAWTO RX,Y
1003 Y=Y+1:NEXT T
1004 FOR T=14 TO 2 STEP -1:COLOR T
1005 PLOT LX,Y:DRAWTO RX,Y
1006 Y=Y+1:NEXT T
1007 Y=A:FOR T=2 TO 14:COLOR T
1008 PLOT PX,PY:DRAWTO RX,Y
1009 Y=Y+1:NEXT T
1010 FOR T=14 TO 2 STEP -1:COLOR T
1011 PLOT PX,PY:DRAWTO RX,Y
1012 Y=Y+1:NEXT T
1013 COLOR 0:PLOT PX,PY:RETURN
```

Program III

```
10 GRAPHICS 11
20 COL=0:DIR=1
30 FOR A=0 TO 79
40 COL=COL+DIR
50 COLOR COL
60 IF COL>16 OR COL<1 THEN DIR=-DIR:GO
TO 40
70 PLOT A,0:DRAWTO A,A:DRAWTO 0,A
80 NEXT A
90 GOTO 90
```

Program IV

colour informtion but also the luminance information. You arrive at the value by using the formula:

X = (Colour * 16) + Luminance

where X is the value which gets poked into the register.

For example, suppose you want to specify Colour 5 with Luminance 8, a sort of light purple colour. The value to be poked would be (5 * 16) + 8 = 88.

Since COLOR 0 controls the background colour, and this command corresponds to the register in location 704, we can change the background colour by poking location 704. Using the light purple colour that we've just calculated as 88, try entering the following:

FOR I=1 TO 2 STEP 0:GR.10 :POKE 704,88:NEXT I

Once again we've used the STEP 0 trick to set up a perpetual loop so that the Mode 10 screen is constantly displayed. If all has gone according to plan, your screen should be filled with colour/luminance combination 88, or light purple.

We can use the fact that the registers are all in adjacent locations to produce some interesting effects. Suppose, for example, that we load the registers with particular values. We can then move the values "along" one register and move the last value back to the beginning.

This will have the effect of creating a "circle" of colour, and we can use this to produce an effect of movement. If your eyes aren't feeling too tired, try entering Program V.

Lines 10 to 120 load the registers with random values and then draw bands of these colours across the screen. Each band is five rows deep. Lines 130 to 190 then shuffle the registers around constantly, producing the movement effect.

Since the colour values are selected randomly, the display will be different each time you run the program.

Use Break to give your eyes a rest every now and then.

If you want to choose a random background colour too, change line 30 to read:

30 FOR A = 0 TO 8

Because these modes require the GTIA chip, you'll sometimes see them referred to as the GTIA modes.

This chip's job is to interpret the data passed to it by the Antic chip, and in fact Modes 9, 10 and 11 are three different interpretations of Mode 8. Consequently they require the same amount of memory – 8k.

● *Next month we'll finish off this series with a look at Modes 12 to 15 which are available to XL and XE owners from Basic.*

```
10 C=0
20 GRAPHICS 10
30 FOR A=1 TO 8
40 POKE 704+A,INT(RND(0)*256)
50 NEXT A
60 FOR Y=0 TO 188 STEP 5
70 C=C+1:IF C>8 THEN C=1
80 COLOR C
90 FOR Z=0 TO 4
100 PLOT 0,Y+Z:DRAWTO 79,Y+Z
110 NEXT Z
120 NEXT Y
130 A=PEEK(705)
140 FOR B=705 TO 711
150 POKE B,PEEK(B+1)
160 NEXT B
170 POKE 712,A
180 FOR DELAY=1 TO 20:NEXT DELAY
190 GOTO 130
```

Program V

Get into top gear for a gruelling challenge



WITH the current trend toward athletics simulations, you might expect a game called **The Great American Cross-Country Road Race** to be all about marathon running – shades of Flanagan's Run, Loneliness of the Long Distance Runner, and all that.

A gruelling race game this certainly is, but not on foot. A powerful racing car is your mode of transport.

Road Race (well, I'm not typing that title out again) is Activision's latest and follows in the best traditions of Pole Position and Pit Stop.

My thanks to Software Express of Birmingham for speedily arranging to let me have a review copy as soon as it became available here.

At bottom, the game is a race against other drivers across America. But there's more to it than just welting past everything on four wheels.

To begin with, you can try to compete against any one of nine fields of already established times. Each field consists of the best results of 10 drivers.

Then there are four west to east coast crosscountry races to choose from: Los Angeles to New York, Seattle to Miami, San Francisco to Washington, and the US Tour. The latter is a toughie since it requires you to drive through every city on the map.

The map pops up once you've selected your race. And this is much, much more than a bit of gloss – careful planning

GUILTY UNTIL



IT was a wet night when I arrived at the mansion. As I entered, my reporter's instincts made me wonder whether I might be a little too conspicuous. I needn't have worried.

Over by the fireplace Titania, queen of the fairies, was chatting up a sheik. She was going on about one of her horses, name of Lurking Grue.

A vampire seemed to be enjoying himself hugely. A six-foot rabbit cavorted with a man-sized peanut butter sandwich. Three mice in dark glasses brushed past Pacman. An astronaut strolled up to the bar.

Near the entrance a gorilla was doing a splendid job of looking after the guest's coats.

Other assorted weirdos were discussing everything from politics to local scandals while the more athletic took to the dance floor. By comparison, the cowboy looked the very model of sobriety and good taste. The man in the outlandish cowboy outfit was me.

I wasn't having a bad dream – the nightmare would come later. No, I was attending one of Veronica Ashworth's famous hallowe'en parties.

Actually I was mixing business with pleasure. Pleasure because I had been invited as a friend of the hostess. Business because my editor thought there might be a good story in it.

The fairy queen, none other than mine hostess Veronica, had clearly been knocking back the Buck's Fizz from quite early on. Her words were slurred and she was none too steady on her fairy pins.

Emphasising a point to the sheik, she waved her glass on high and succeeded in slopping alcohol and ice cubes all down her tinseled dress. Using a word that would make an elf's hair curl, she staggered off to clean up.

A little later, I saw Veronica again. She was slumped on the floor of her office elsewhere in the mansion. She was less than dead drunk – she was dead, period.

And if that wasn't enough to dampen my party spirits, my cowboy's lariat, which I could have sworn I hung up in the closet with my damp coat, was wrapped tightly round her pretty little neck.

Just to put the cherry on the cake, a bullet lay by the body. Guess whose gunbelt had one empty cartridge loop? I could almost hear the click of the jail cell door.

So there I was, plunged deep into **Suspect,** a superb new text adventure from

and selection at this stage should help you achieve good times. Equally, slapdash selection may well be regretted before you even reach your first checkpoint.

A flashing circle on the map denotes your point of departure, while a pulsating arrow indicates a possible next stop on your route. By joystick movement, the arrow can be positioned to another destination city. Only those cities connected by a major road to your departure point are available for selection.

A scrolling bulletin across the top of the screen tells you the conditions on the road you have chosen. You have to be careful – things like lane closures, the dreaded roadworks or oil slicks could cause you to lose valuable time.

The weather conditions are no less critical in your route selection. Just like our good old Met Office maps, this one has plenty of those cute little symbols. Snowflakes and rainclouds indicate just that while clouds without rain indicate fog. It all seems more like Britain than the US of A!

A clock indicates your time of departure. It can be set to any time you like. But watch it – you could end up driving at night or arriving at a city in the middle of the rush hour.

Now the race is on. The screen changes to reveal a Pole Position type scene: blue sky, green sward, a city skyline and your car sitting on a central road which tapers into the distance.

At the foot of the screen, reading from left to right, is a fuel gauge, a rev counter, timer, mileometer, speedometer and radar trap warning.

The timer counts down, showing how much time remains for you to complete this leg of the journey. Failure to reach your destination before the timer reaches zero disqualifies you from the race, and that means you'll have to start all over again.

If you beat the clock the spare time is added to the time allowed for the next stage, so it pays to burn rubber.

The mileometer also counts down, telling you how much further to your target city. The radar warning lights up when a police speed trap lies ahead – you'll know anyway because sirens start blaring.

You have two choices when hitting a trap – slow down or try to outrun the white police car. If you're caught, you stop dead, the police car pulls alongside, a sardonic message is displayed. like "Where's the fire?" and you're stuck there for several precious seconds. At least you don't get booked!

Left and right movement of the car is controlled by similar movements of the joystick. The fire button is used to accelerate, and pulling back on the joystick applies the brakes.

Gear changing is neatly handled. When the rev counter reaches the 9 o'clock position – and by then the engine is beginning to scream – the fire button is released and a quick forward tap of the joystick causes a change up. Similarly, a quick backward tap shifts the gears down.

All very easy to get the hang of and, coupled with the appropriate engine noises, adds much to the motor racing atmosphere of the game.

There are four gears. Shift too soon and the car will respond sluggishly. Shift too late and you could blow your engine and have to push the car to the next service station. Pushing is accomplished by tapping doggedly away at the fire button.

You'll also have to push if you run out of petrol. Warning messages are given when you are approaching a service station.

The station is shown as a pink petrol pump and you must pull up beside it. Your car will be automatically refilled and/or repaired.

It's all too easy to overshoot, or stop by mistake at a cactus, when you've been haring along at 150mph.

If you're not driving very fast, other drivers – and there are lots of them – go flashing past but never hit you from behind. The same cannot be said for you.

If you hit a car while overtaking your car instantly switches to bottom gear and slides over to the side of the track. Luckily, it hasn't stalled.

Arrive at the city within the time limit and you'll be greeted with a jolly tune and a welcome sign. Then it's back to the map to select the route for your next leg.

Run out of time and you'll be told "Sorry" and be out of the race.

The sound effects certainly add to the air of excitement and joystick response is perfect.

The graphics are first rate – I especially liked the changes in skylines, the gradually darkening scene as night descends and the smooth high speed scrolling.

Add these qualities to the planning elements, the combinations of possible routes and the variety of the challenge, and you have a very good race game indeed. This is one I would unhesitatingly recommend to any race game fan.

Bob Chappell

PROVEN INNOCENT

Infocom. Suspect is one of their best and follows in the footsteps of Deadline and Witness, their earlier detective adventures.

Deadline called you in to investigate a suspicious suicide, while Witness placed you as an eye witness to a dastardly crime.

In Suspect you find yourself far more embroiled in murder most foul than ever before – all the evidence points to you as the prime suspect. Unless you can find out who really dunnit and pronto, your reporting days are over.

The case is stacked against you from the outset. There's the rope for starters. Then there's the bullet and gunbelt. You're also an outsider.

Yes, it's a set-up all right but since you know you're not a killer, it follows that the real murderer must be among the motley collection of uppercrust characters present at the party.

The police are soon on the scene, among them Sgt. Duffy, of Deadline fame. What you must do is to build up a case by exploring the mansion and grounds, watching and talking to the various characters, and analysing and deducing.

Only by gathering enough irrefutable proof and presenting it to the police can you establish your innocence and another's guilt.

You can't make a citizen's arrest – you have to convince the detective to do that. You can accuse people though, but much good will it do you if you go around making wild allegations.

You have but a few hours (game time) to solve the mystery. Failure to do so will result in your being arrested and found guilty of second degree murder.

Suspect is graded as an advanced adventure, so it's likely you'll be arrested and convicted many times over many weeks. Never mind, the preceding stimulation and entertainment more than compensates for being falsely imprisoned.

All the Infocom hallmarks are here, massive vocabulary, sophisticated input parser, dazzling and detailed prose, twists and turns, good humour, plenty of original puzzles and multiple solutions.

No doubt about it, this is yet another excellent adventure from Infocom – how do they keep it up? I accuse Infocom of being maddeningly brilliant. Prove their guilt beyond a shadow of a doubt yourself by buying Suspect. I rest my case.

Bob Chappell

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Arcade action deep in the pond



WHY not take a break from those shoot-em-up arcade games and take a visit to a quiet country pond? Starcade can take you there with **Savage Pond,** their interpretation of wild life under water.

Quiet it may be, peaceful it certainly isn't. In this fast arcade game you start by playing the role of a tadpole struggling to survive to adulthood.

Just like the inhabitants of any country pond, you have to avoid the perils of other insects and animals striving to live in there with you.

Survival of the fittest would appear to be an apt rule in this scenario.

Using the keyboard or joystick you must guide your tadpole through its stage of immaturity, fattening it as you guide it round the pond digesting amoeba.

Now and again a fat juicy worm falls into the water and eating this increases your worm count by one.

Every time your worm count reaches five a beetle larva appears and if you can polish this off you take another step along the long path of evolution.

In stage one a multi-coloured dragonfly buzzes about above the pond dropping its eggs into the water. It is vital that you eat these as they sink, otherwise they settle into the cover of deadly hydra and become irretrievable.

When they hatch at the bottom of the pond a larva dashes off the screen only to return as a deadly dragonfly nymph whose staple diet is . . . yes, tadpoles.

He relentlessly chases you until he either catches you or you tire him out by outswimming him over the screen.

In stage two a bulldozer comes along, adding another hazard as it dumps radioactive waste into the pond.

If you can survive all this and manage to become a frog, with a flick of your long sticky tongue you can catch that pestering dragonfly as it buzzes overhead. There's thanks for you.

If having got this far you have had all your eggs and tadpoles destroyed, the computer dating agency comes into action and provides you with a lady frog.

After a loving embrace you provide a specimen of frog spawn and depart for pastures new.

The spawn comes to rest at the bottom of the pool before hatching to give you another chance to start all over again.

As it progresses the program introduces many more wonders of the deep such as blood worm, jelly fish, spiders, water fleas and bumble bees. They all have their role to play in this real life adventure.

Overall the game is fun to play and has very good graphics. The sound is effective and complements the game very well.

The instructions are clear and concise and give a good insight not only to the game, but to the species that you will meet and their descriptions.

The 16k cassette costs £7.95 – a bargain in my opinion.

David Andrews

A touch of the Bruce Lees

SIT down at your Atari, hold your joystick at an aggressive angle, screw up your face, let rip a bloodcurdling shout and go to it.

Well, even if you're not acting this strangely at the start of playing English Software's **Chop Suey,** I guarantee you will be after just a few minutes.

This martial arts simulation really gets to you. If you thought you were just a gentle pacifist at heart, better think again after you've tried this game. You might discover a latent Bruce Lee has been lurking undetected under your skin.

The action takes place, not in the fresh air or a gymnasium, but in what appears to be a theatre.

In fact it's very similar to the traditional setting used for the weightlifting events at the Olympic Games. In the lower portion of the screen, looking up at an enclosed stage, are three rows of spectators who fidget around from time to time to let you know they're wide awake.

On stage is where all the leaping, kicking and punching takes place.

The two dreadlocked Kung-Fu participants are dressed similarly – loose, white pyjama-like costumes complete with black belts.

There are three options: player versus player, player versus computer and, if you want to select demo mode, computer versus computer. The demo mode will automatically begin if you just sit there and do nothing.

In addition you can choose between the laughingly named slow or fast modes. Slow mode is quite fast enough, thank you very much.

Fast mode has the two players dashing around like characters from one of those old Keystone Kop movies. Move up to this level only when you've become really adept at the art.

There are eight moves at your disposal – two shuffles, three kicks, one jab and two jumps. All are executed by moving the joystick to the appropriate compass position.

Pressing the fire button lets you make one further move – a smart about-turn from the direction you are currently facing.

The quick shuffles take you to the left or right. The one punch in your repertoire is a stiff-armed jab. Used well it can have very gratifying results.

Kicks come in three sizes: the low sweep to the opponent's legs, the sharp kick

→

to the midriff and, my personal favourite, the high kick.

Executing the high kick when your opponent is some distance from you is most satisfying – you arc smoothly through the air with your leading leg outstretched as dangerously as a warrior's lance.

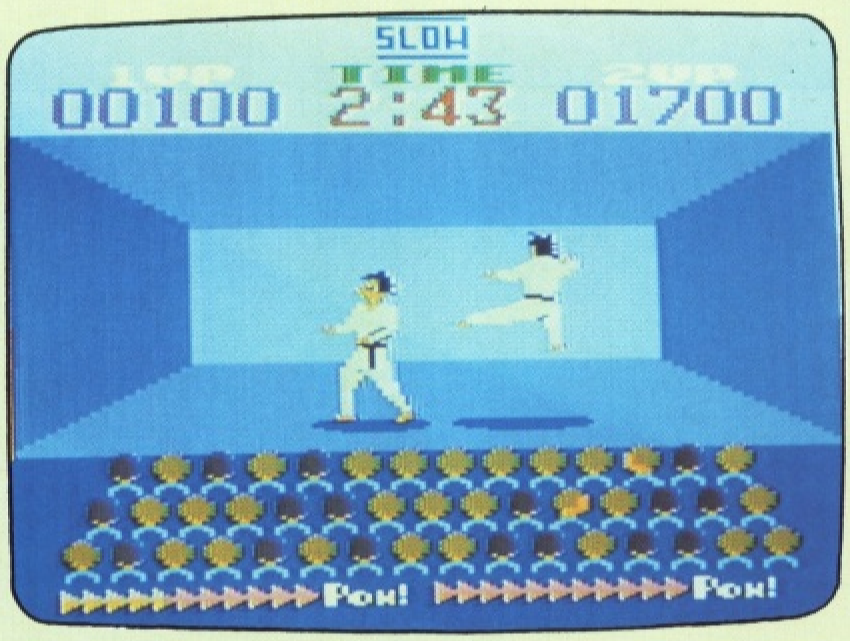
There are two leaps. One is a simple vertical jump into the air, the other a full-blooded somersault taking you right over the top of your opponent's head to the far side of the stage.

At the bottom of the screen, each player has a Pow! gauge, pain-level indicator. It changes colour as punishment is soaked up. When it starts to flash the player is in a fragile state of health and one more thump will bring him to the floor.

The player recovers after a brief respite but always has a residual pain level which rises after each knockdown. When this reaches an intolerable level that player is retired and the opponent declared the winner.

It is comforting to note that nobody ever gets completely flattened – falling down on one knee and grimacing at the floor is the worst that can happen to you.

Apart from your opponent's



fists and feet, there is one other hazard. From time to time an air vent opens in the stage ceiling and a large scorpion drops down to scuttle across the stage.

You have to leap to avoid its poisonous bite. David Attenborough would not be amused – scorpions are supposed to have lethal stings, not bites!

The scorpion interludes detract somewhat from the main business at hand and the game is exciting enough without them. Even so, they do present an added challenge.

Scorpions aside, the only minor criticism I have is that the contestants are identical twins. If you've both just finished cavorting around the stage and have ended up close to each other, it is possible to get in a muddle as to which fighter is yours. Differently coloured belts or hair, for example, would have helped.

The two-player option is hugely entertaining but no doubt much of the time you'll play against the computer. And that option is just as much fun.

The computer opponent seems pretty easy meat to start with, a few swift jabs usually sufficing to bring him quickly to his knees. However, you mustn't let that mislead you into leaving your Atari and picking a fight with the local Third Dan.

For once duffed up, the first computer opponent is immediately replaced by another but considerably more skilled fighter. And there's six more where those came from, each more experienced and tougher than the last. The challenge lies in seeing if you can out-Kung all eight contenders.

One item intrigued me. The cassette inlay hints that excellent play may be rewarded. Rumour has it that the famous Kung-Fu talent scout Foo Yung (groan) and his son, Spling Loll (ditto) are in the audience.

You'll just have to play well to see if that's of any significance – my play wasn't even up to beating opponent three.

Colour is excellent while sound effects, introductory music, whooshes and beeps enhance the enjoyment.

But it is in the animation where the game excels. The players' movements are very realistic – the smoothness of the flying kick alone has to be seen to be believed.

Chop Suey is superb, and at only £8.95, this has got to be one of the best Atari buys of the year. Go get it, grasshopper.

Bob Chappell

Saving a life requires dedication

BIO-DEFENCE, from Tymac, appears to be an original idea in computer software. The object of the game is to keep a patient's temperature below the level at which he dies.

There are two separate parts to the game. In the first an outline of the human body is displayed horizontally across a grid of approximately 500 squares.

Using a joystick, you move a cursor from square to square within the body outline until you find an area of infection. There is no skill attached to finding this – it just suddenly appears, indicated by a orange dot.

From here you progress on to part two. This scenario is acted out in the infected area, which is laid out like a maze.

You play the part of what appears to be a white cell, looking something like an amoeba, and your task is to soak up most of the bacteria around you. I say "appears" because there were no instructions with my advance review copy and surprisingly, none on the screen.

There are, in fact, several different sizes of bacteria and you should only be chasing the smaller ones. Any contact with the largest variety results in a darkening of your colour.

Should you contact these too often within a short space of time, you turn black and die and the patient's temperature rises by one degree.

You *can* eat the big blobs but you've got to time it right, hiding in your niche at the bottom of the screen. Of course, while you're hiding the bugs are multiplying.

Should you succeed in absorbing all the bugs, you automatically return to the first part of the game and start to search again for another infected area.

Once you find one it's back to work as a bug gobbler until such time as you get zapped too often by the big boys, and the patient's temperature gets so high that he snuffs it.

The more successful you are in your bacteria bashing the more numerous and vicious are the enemy in subsequent locations.

The graphics are quite nice but don't really do the Atari justice, and the sound is nothing to write home about. An attempt has been made to synthesise speech, but the result is almost unrecognisable.

The game was fun the first few times I played it, but I didn't find enough variety to maintain interest.

David Andrews



What it offers the Atari user...

Give your micro mainframe power

With MicroLink your micro becomes a terminal linked directly to the Telecom Gold mainframe computer, and able to tap its tremendous power and versatility. Right away you'll be able to use giant number-crunching programs that can only run on a mainframe. You can set up your own computerised filing systems, store and update statistics and other information, cross-reference material between files, selectively extract the information you want, perform massive calculations and design reports to display information from any of the files and in any format you choose.

The biggest bulletin board of them all

The number of bulletin boards is growing rapidly. New ones are springing up in all parts of Britain and all over the world, with people of like minds chatting to each other on all manner of subjects. The only snag is that the vast majority are single-user boards – which means lots of other people are also trying to make contact and all too often all you get is the engaged tone. But with the MicroLink bulletin board there is no limit to the number of people using it at the same time. And no limit to the number of categories that can be displayed on the board.

We're only a local phone call away

More than 96 per cent of MicoLink subscribers can connect to our mainframe computer in London by making a local phone call. This is possible because they use British Telecom's PSS system, which has access points all over Britain. A local phone call is all you need, too, for access to the international Dialcom system through MicroLink.

Telemessages – at a third of the cost

The modern equivalent of the telegram is the telemessage, which if sent before 8pm is delivered by first post the following day (except Sunday). Originally designed for people to phone their message via the operator, the service costs £3.50 for 50 words. Now it's available via MicroLink – and costs only £1.25 for up to 350 words!

Send and receive telex messages

With MicroLink you can turn your micro into a telex machine, and can send and receive telex messages of any length. You will be able to communicate directly to 96,000 telex subscribers in the UK, 1½ million worldwide – and even with ships at sea via the telex satellite network. Business people can now send and receive telexes after office hours, from home or when travelling. You can key in a telex during the day and instruct MicroLink not to transmit it until after 8pm – and save 10 per cent off the cost!

The mailbox that is always open

MicroLink is in operation 24 hours a day, every day. That means you can access your mailbox whenever you want, and from wherever you are ... home, office, airport – even a hotel bedroom or golf club! No-one needs to know where you are when you send your message.

What does it all cost?

Considering all the services you have on tap, MicroLink is remarkably inexpensive. You pay a once-only registration fee of £5, and then a standing charge of just £3 a month. On-line costs are 3.5p a minute (between 7pm and 8am) or 10.5p a minute during office hours. There is an additional 2p a minute PSS charge if you are calling from outside the 01- London call area. Charges for telex, tele-messages and storage of files are given on the next page.

How much it costs to use MicroLink

Initial registration fee: £5.

Standing charge: £3 per calendar month or part.

Connect charge: 3.5p per minute or part – cheap rate; 10.5p per minute or part – standard rate.
Applicable for duration of connection to the Service. Minimum charge: 1 minute. Cheap rate is from 7pm to 8am, Monday to Friday, all day Saturday and Sunday and public holidays; Standard rate is from 8am to 7pm, Monday to Friday, excluding public holidays.

Filing charge: 20p per unit of 2,048 characters per month.
Applicable for storage of information, such a telex, short codes and mail files. The number of units used is an average calculated by reference to a daily sample.

Information Databases: Various charges.
Any charges that may be applicable are shown to you before you obtain access to the database.

MicroLink PSS service: 2p per minute or part (300 baud); 2.5p per minute or part (1200/75 baud).
Only applies to users outside the 01- London call area.

Telex registration: £10.

Outgoing telex: 5.5p per 100 characters (UK); 11p per 100 (Europe); 16.5p per 100 (N. America); £1.15 per 400 (Rest of world); £2.75 per 400 (Ships at sea).
Deferred messages sent on the night service are subject to a 10 per cent discount.

Incoming telex: 50p for each correctly addressed telex delivered to your mailbox. Obtaining a mailbox reference from the sender incurs a further charge of 50p.
It is not possible to deliver a telex without a mailbox reference. If a telex is received without a mailbox reference the sender will be advised of non-delivery and asked to provide a mailbox address. Each user validated for telex and using the facility will incur a charge of 6 storage units a month. Further storage charges could be incurred depending on the amount of telex storage and the use made of short code and message file facilities.

Telemessages: £1.25 for up to 350 words.

Radiopaging: No charge.
If you have a BT Radiopager you can be paged automatically whenever a message is waiting in your mailbox.

International Mail: For the first 2,048 characters – 20p to Germany and Denmark; 30p to USA, Australia, Canada, Singapore, Hong Kong and Israel. For additional 1,024 characters – 10p; 15p.
These charges relate to the transmission of information by the Dialcom service to other Dialcom services outside the UK and the Isle of Man. Multiple copies to addresses on the same system host incur only one transmission charge.

Billing and Payment: All charges quoted are exclusive of VAT. Currently all bills are rendered monthly.

Software over the telephone

MicroLink is setting up a central store of software programs which you'll be able to download directly into your micro. The range will include games, utilities, educational and business programs, and will cover all the most popular makes of micros.

Talk to the world – by satellite

MicroLink is part of the international Dialcom network. In the USA, Australia and a growing number of other countries there are many thousands of users with electronic mailboxes just like yours. You can contact them just as easily as you do users in Britain – the only difference is that the messages from your keyboard go speeding around the world via satellite.

What you need to access MicroLink

You must have three things in order to use MicroLink: a computer (it can be any make of micro, hand-held device or even an electronic typewriter provided it has communications facilities), a modem (it can be a simple Prestel type using 1200/75 baud, or a more sophisticated one operating at 300/300 or 1200/1200 baud), and appropriate communications software.

MicroLink

in association with

TELECOM GOLD *

Application Form

AT 11

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☐ I confirm that I am over 18 years of age.

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Start date ______________________

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Database Publications
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY.

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Name ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Position ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

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Commencement of Service
Please indicate month of commencement ☐☐ 19 ☐☐
Allow 10 days for validation of mailbox

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Whilst Database Publications Ltd is the supplier of all the services to you, the commission and billing thereof will be handled by Telecom Gold as agents for Database Publications Ltd.
Date of first payment to be on 15th of month following commencement.
Please complete billing authorisation form A, B or C below:

A. Direct Debiting Mandate *(Enter full postal address of Bank Branch)*
To ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

I/We authorise you until further notice in writing to charge to my/our account with you on or immediately after 15th day of each month unspecified amounts which may be debited thereto at the instance of British Telecommunications plc – TELECOM GOLD by Direct Debit. Bills are issued 10 days before debit is processed.

Name of Account to be debited ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Account Number ☐☐☐☐☐☐☐☐

B. Please debit my/our Access/Visa/*American Express account number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
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I/We authorise you until further notice in writing to charge to my/our account with you on or immediately after 15th day of each month unspecified amounts which may be debited thereto at the instance of British Telecommunications plc – TELECOM GOLD. Bills are issued 10 days before charge is applied to your account.

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HORIZONTAL scrolling is essentially achieved in a similar way to the vertical scrolling described in my previous article. However, as you will see, things are never quite that simple.

You will remember that coarse vertical scrolling can be achieved by moving the start of screen memory down the screen data one line at a time. Horizontal scrolling can be similarly achieved by moving the pointers for screen memory along one character at a time. This is shown in Demo #1.

Firstly you need to decide what data you want to show. I have chosen to hold the data in a string (A$). You will notice that you have to use CHR$(0) that is Control , (the heart symbol) to represent a space. This is because when printing to the screen a space is CHR$(32) but the Atari converts this to a 0 in screen memory. In fact all the numbers printed are stored as a different number in screen memory. Play around with A$ to confirm this.

MIKE ROWE takes a look at horizontal scrolling in Part V of his series on how to give your program displays the professional touch

Back to the program. The high and low bytes of the address of A$ – that is, screen memory – are calculated and stored in LO,OLDLO,HI and OLDHI. A custom display list is created in Page 6 (memory location 1536), and the operating system is told that it is there by poking the low and high bytes of the display list into decimal 560 and 561.

Now we are ready to scroll. Firstly increase the low byte of the address of screen memory by 1. If the number is greater than 255 then reset LO to 0 and increase HI by 1.

You now have the new address of screen memory moved along by one byte – one character. These values can now be placed in the two bytes following the LMS command (Load Memory Scan – see previous articles) as in line 210. Repeat this and there you have coarse scrolling of one line.

Smooth scrolling is again similar to vertical smooth scrolling. Demo # 2 shows how this is used. A similar display list is used but a decimal 16 is added to the mode byte. This is 71 – that is, Antic mode 7 + LMS instruction 64. Adding a 16 enables smooth scrolling in that line.

The horizontal smooth scrolling register is decimal 54276 ($D404). This can be poked with numbers up to 15 which will move the line along one pixel at a time up to a maximum of 16 – two Graphics Mode 2 characters.

Now obviously combining these two techniques will result in true smooth horizontal scrolling. Demo #3 is essentially the same as Demo #1 but with the smooth scrolling added to it.

Now we begin to get the first drawback, screen flicker. This is because the changes often occur part way through the creation of the screen on the television.

Things can be improved somewhat by making some of the changes more rapidly in machine code, as in Demo #4. The machine code here simply pokes each memory address with the byte following it but much more rapidly than in Basic.

Okay, so we have reasonably good smooth scrolling of one line. Not going to make much of a game is it? The next step is to extend this to full or part screen scrolling.

Unfortunately things are not as simple as in vertical scrolling, where

```
10 REM HORIZONTAL SCROLLING DEMO #1
100 DIM A$(100):A$(1,20)="♥♥♥♥♥♥♥♥♥♥♥♥♥
♥♥♥♥♥♥♥♥♥":A$(81,100)=A$(1,20):REM A$(1
,20) IS 20 (CTRL COMMA)
110 A$(21,80)="atari♥user♥¯♥published♥
by♥database♥publications♥limited♥♥♥♥♥"
115 REM CTRL COMMAS BETWEEN WORDS & 5
AT END. ¯ = CTRL M
120 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256:REM FIND ADDRESS OF MESSAGE
130 OLDLO=LO:OLDHI=HI:X=1:REM STORE OR
IGIONAL LOCATION OF A$
190 REM CREATE DISPLAY LIST IN PAGE 6
200 DL=1536:POKE DL,112:POKE DL+1,112:
POKE DL+2,112:POKE DL+3,71:REM 3 BLANK
 LINES , 1 BASIC MODE 2+LMS INSTRUCTN
210 POKE DL+4,LO:POKE DL+5,HI:REM LOW
AND HIGH BYTES OF SCREEN DATA (A$)
220 POKE DL+6,112:POKE DL+7,65:POKE DL
+8,0:POKE DL+9,6:REM 1 MORE BLANK LINE
 , END LIST , POINT TO START OF LIST
230 POKE 560,0:POKE 561,6:REM TELL OPE
RATING SYSTEM LOCATION OF NEW LIST
499 REM SCROLL
500 LO=LO+1:IF LO>255 THEN LO=0:HI=HI+
1:REM INCREMENT LO & HI BYTES OF LOCAT
ION OF SCREEN MEMORY
520 X=X+1:IF X=81 THEN X=1:HI=OLDHI:LO
=OLDLO:REM WHEN DONE 80 TIMES RESET
540 POKE DL+4,LO:POKE DL+5,HI:REM POKE
 NEW VALUES OF LO & HI BYTE OF SCREEN
MEMORY INTO DISPLAY LIST
560 FOR I=1 TO 50:NEXT I:REM DELAY
590 GOTO 500:REM AND AGAIN
```

Demo #1

```
10 REM HORIZONTAL SCROLLING DEMO #2
100 DIM A$(30):A$="♥♥♥♥♥♥♥♥♥♥atari♥user
♥♥♥♥♥♥♥♥":REM ALL ♥ ARE CNTL COMMAS
120 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256+2
200 DL=1536:POKE DL,112:POKE DL+1,112:
POKE DL+2,112:POKE DL+3,71+16
210 POKE DL+4,LO:POKE DL+5,HI
220 POKE DL+6,112:POKE DL+7,65:POKE DL
+8,0:POKE DL+9,6
230 POKE 560,0:POKE 561,6:REM SIMILAR
SET UP AS IN DEMO #1
499 REM SCROLL
500 FOR I=0 TO 15:POKE 54276,I:FOR J=1
 TO 20:NEXT J:NEXT I:REM SMOOTH SCROLL
 16 PIXELS
520 FOR I=15 TO 0 STEP -1:POKE 54276,I
:FOR J=1 TO 20:NEXT J:NEXT I:REM SCROL
L BACK AGAIN
590 GOTO 500:REM AND AGAIN
```

Demo #2



tent programmers do it sideways

```
10 REM  HORIZONTAL SCROLLING DEMO #3 
100 DIM A$(100):A$(1,20)="♥♥♥♥♥♥♥♥♥♥♥♥
♥♥♥♥♥♥♥♥":A$(81,100)=A$(1,20)
110 A$(21,80)="atari♥user♥¯♥published♥
by♥database♥publications♥limited♥♥♥♥♥"
120 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256
130 OLDLO=LO:OLDHI=HI:X=1
200 DL=1536:POKE DL,112:POKE DL+1,112:
POKE DL+2,112:POKE DL+3,71+16
210 POKE DL+4,LO:POKE DL+5,HI
220 POKE DL+6,112:POKE DL+7,65:POKE DL
+8,0:POKE DL+9,6
230 POKE 560,0:POKE 561,6:REM SET UP A
S IN DEMO #1
499 REM  SCROLL 
500 LO=LO+1:IF LO>255 THEN LO=0:HI=HI+
1:REM INCREMENT START OF SCREEN MEMORY
520 X=X+1:IF X=81 THEN X=1:HI=OLDHI:LO
=OLDLO
540 POKE 54276,7:POKE DL+4,LO:POKE DL+
5,HI:REM COARSE SCROLL 1 CHARACTER
560 FOR I=6 TO 0 STEP -1:FOR J=1 TO 10
:NEXT J:POKE 54276,I:NEXT I:REM SMOOTH
 SCROLL 8 PIXELS
590 GOTO 500:REM AGAIN
```

Demo#3

```
10 REM  HORIZONTAL SCROLLING DEMO #4 
30 FOR I=1600 TO 1624:READ A:POKE I,A:
NEXT I:REM MACHINE CODE DATA
40 DATA 104,74,170,160,0,104,133,255,1
04,133,254,104,240,4,200,145,254,136,1
04,145,254,202,208,237,96
100 DIM A$(100):A$(1,20)="♥♥♥♥♥♥♥♥♥♥♥♥
♥♥♥♥♥♥♥♥":A$(81,100)=A$(1,20)
110 A$(21,80)="atari♥user♥¯♥published♥
by♥database♥publications♥limited♥♥♥♥♥"
120 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256
130 OLDLO=LO:OLDHI=HI:X=1
200 DL=1536:POKE DL,112:POKE DL+1,112:
POKE DL+2,112:POKE DL+3,71+16
210 POKE DL+4,LO:POKE DL+5,HI
220 POKE DL+6,112:POKE DL+7,65:POKE DL
+8,0:POKE DL+9,6
230 POKE 560,0:POKE 561,6
500 LO=LO+1:IF LO>255 THEN LO=0:HI=HI+
1
520 X=X+1:IF X=81 THEN X=1:HI=OLDHI:LO
=OLDLO
540 A=USR(1600,54276,7,DL+4,LO,DL+5,HI
):REM MACHINE CODE TO SMOOTH & COARSE
SCROLL ALMOST SIMULTANEOUSLY
560 FOR I=6 TO 0 STEP -1:FOR J=1 TO 10
:NEXT J:POKE 54276,I:NEXT I:REM SMOOTH
 SCROLL 7 PIXELS
590 GOTO 500
```

Demo#4

```
10 REM  HORIZONTAL SCROLLING DEMO #5 
100 DIM A$(1002):A$="atari♥user♥":FOR
I=12 TO 988 STEP 11:A$(I)=A$:NEXT I:RE
M CNTL COMMA AFTER atari & user
110 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256
120 DIM MEMLO(10),MEMHI(10),LO(10),HI(
10)
190 REM NEW DISPLAY LIST
200 POKE 1536,112:POKE 1537,112:POKE 1
538,112:REM 3 BLANK LINES
210 FOR I=1 TO 10:REM 10 GRAPHICS 2 LI
NES WITH LMS INSTRUCTIONS FOLLOWED BY
SCREEN MEMORY LOCATIONS
220 POKE 1536+I*3,71
230 MEMLO(I)=1536+I*3+1:MEMHI(I)=MEMLO
(I)+1:REM STORE DISPLAY LIST MEMORY LO
CATIONS IN ARRAYS
240 LO(I)=LO:HI(I)=HI:LO=LO+100:IF LO>
255 THEN LO=LO-256:HI=HI+1:REM STORE S
CREEN MEMORY LOCATIONS IN ARRAYS
250 POKE MEMLO(I),LO(I):POKE MEMHI(I),
HI(I)
260 NEXT I
270 POKE 1571,65:POKE 1572,0:POKE 1573
,6:REM END DISPLAY LIST
280 POKE 560,0:POKE 561,6:REM POINT OS
 TO NEW DISPLAY LIST
500 REM EXECUTE SCROLL
510 FOR J=1 TO 80:REM 80 COARSE SCROLL
S
520 FOR I=1 TO 10:REM 10 LINES
530 LO(I)=LO(I)+1:IF LO(I)>255 THEN LO
(I)=LO(I)-256:HI(I)=HI(I)+1:REM CALCUL
ATE 10 NEW HI & LO BYTES
540 NEXT I
550 FOR I=1 TO 10:POKE MEMLO(I),LO(I):
POKE MEMHI(I),HI(I):NEXT I:REM POKE NE
W BYTES INTO DISPLAY LIST
560 NEXT J
600 GRAPHICS 0
```

Demo#5

the rest of the screen will follow the first line.

Firstly the screen memory needs to be considered. In vertical scrolling the screen is the same width as a normal screen. However in horizontal scrolling the screen is going to be much wider. Therefore using operating system commands such as DRAW or PRINT are really out of the question.

Secondly each line needs to have its own LMS instruction. Therefore the display list will consist of groups of three numbers.

The first will be a 64 (LMS) + mode number + 16 (for smooth scrolling). The LMS instruction means that the next two numbers will be the low and high bytes of the screen memory for that line.

Now we have a display list consisting of numerous individual lines each similar to the single line in Demos #1 to 4. To scroll these you need to move each of the memory location pointers along one byte at a time.

Demo #5 does just this in Basic. As you can see, the "scroll" goes in

waves down the screen. Basic is just too slow.

Demo #6 is the same program with a machine code routine doing the job of increasing the 10 screen location pointers in the display list. Now the screen moves along in a single block.

The next step is to add the smooth scroll. Demo #7 does this with an improved machine code routine for the coarse scroll. However it is less generalised, and will only work for a 10 line screen scrolling in one direction.

```
10 REM  HORIZONTAL SCROLLING DEMO #6
20 REM  ** SAVE BEFORE RUNNING AS PROG
RAM WILL CORRUPT ITSELF **
30 FOR I=1700 TO 1720:READ A:POKE I,A:
NEXT I:REM READ MACHINE CODE
40 DATA 104,170,104,133,255,104,133,25
4,160,0,104,104,145,254,200,200,200,20
2,208,246,96
100 DIM A$(1002):A$="atari♥user♥":FOR
I=12 TO 988 STEP 11:A$(I)=A$:NEXT I
110 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256
120 DIM MEMLO(10),MEMHI(10),LO(10),HI(
10)
200 POKE 1536,112:POKE 1537,112:POKE 1
538,112
210 FOR I=1 TO 10
220 POKE 1536+I*3,71
230 MEMLO(I)=1536+I*3+1:MEMHI(I)=MEMLO
(I)+1
240 LO(I)=LO:HI(I)=HI:LO=LO+100:IF LO>
255 THEN LO=LO-256:HI=HI+1
250 POKE MEMLO(I),LO(I):POKE MEMHI(I),
HI(I)
260 NEXT I
270 POKE 1571,112:POKE 1572,65:POKE 15
73,0:POKE 1574,6
280 POKE 560,0:POKE 561,6:REM SET UP A
S IN DEMO #5
500 REM EXECUTE SCROLL
510 FOR J=1 TO 80
520 FOR I=1 TO 10
530 LO(I)=LO(I)+1:IF LO(I)>255 THEN LO
(I)=LO(I)-256:HI(I)=HI(I)+1
540 NEXT I
545 REM USE MACHINE CODE FOR FAST MULT
IPLE POKES
550 A=USR(1700,MEMLO(1),LO(1),LO(2),LO
(3),LO(4),LO(5),LO(6),LO(7),LO(8),LO(9
),LO(10))
555 A=USR(1700,MEMHI(1),HI(1),HI(2),HI
(3),HI(4),HI(5),HI(6),HI(7),HI(8),HI(9
),HI(10))
560 NEXT J
600 GRAPHICS 0
```

Demo #6

There's that flicker again...

You now have your smooth horizontal scrolling. Disappointed? I would be, because there's that flicker and flashing again.

The same problem arises as before, because the changes happen part way through drawing the screen, only now things are worse because so many alterations are being made to get smooth scrolling.

As in vertical scrolling, the only way around this is to use machine code during the vertical blank interrupt (for new readers this is the small delay between the drawing of each screen).

```
10 REM  HORIZONTAL SCROLLING DEMO #7
30 FOR I=1700 TO 1730:READ A:POKE I,A:
NEXT I:REM READ IN MACHINE CODE
40 DATA 104,162,10,104,133,205,104,133
,204,160,0,24,177,204,105,1,145,204,20
0,177,204,105,0,145,204,200,200
50 DATA 202,208,237,96
100 DIM A$(1002):A$="atari♥user♥":FOR
I=12 TO 988 STEP 11:A$(I)=A$:NEXT I
110 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256
120 DIM MEMLO(10),MEMHI(10),LO(10),HI(
10)
200 POKE 1536,112:POKE 1537,112:POKE 1
538,112
210 FOR I=1 TO 10
220 POKE 1536+I*3,71+16
230 MEMLO(I)=1536+I*3+1:MEMHI(I)=MEMLO
(I)+1
240 LO(I)=LO:HI(I)=HI:LO=LO+100:IF LO>
255 THEN LO=LO-256:HI=HI+1
250 POKE MEMLO(I),LO(I):POKE MEMHI(I),
HI(I)
260 NEXT I
270 POKE 1571,112:POKE 1572,65:POKE 15
73,0:POKE 1574,6
280 POKE 560,0:POKE 561,6:REM SIMILAR
SETUP
500 REM EXECUTE SCROLL
510 FOR J=1 TO 80
520 FOR I=7 TO 0 STEP -1
530 POKE 54276,I:REM FINE SCROLL 8 PIX
ELS
535 FOR DELAY=1 TO 20:NEXT DELAY
540 NEXT I
550 A=USR(1700,1540):REM MACHINE CODE
WHICH TO EXECUTE COARSE SCROLL
560 NEXT J
600 GRAPHICS 0
```

Demo #7

Although VBI routines are too complicated to discuss at the end of this article, Demo #8 will give you some idea of how much improvement they can give in scrolling.

As a parting note, on the XL and XE models smooth, upward vertical scrolling is very easy in Graphics 0.

Try this. First load a relatively long Basic program. Secondly type POKE 622,255 then press Return. Thirdly type GRAPHICS 0 then Return. Now list the program.

```
10 REM  HORIZONTAL SCROLLING DEMO #8
30 FOR I=1700 TO 1759:READ A:POKE I,A:
NEXT I:REM VBI ROUTINE
40 DATA 104,169,0,141,4,212,133,203,16
2,6,160,181,169,7,76,92
50 DATA 228,198,203,165,203,141,4,212,
16,31,169,7,133,203,141,4,212,238,4,6,
173,4,6,201,234,208,2,169,0
60 DATA 162,0,157,4,6,232,232,232,224,
30,208,246,76,98,228
100 DIM A$(3000):A$="atari♥user♥♥♥♥♥♥"
:FOR I=16 TO 2900 STEP 15:A$(I)=A$(1,1
5):NEXT I
110 HI=INT(ADR(A$)/256):LO=ADR(A$)-HI*
256:HI=HI+1:LO=0
120 DIM MEMLO(10),MEMHI(10),LO(10),HI(
10)
200 POKE 1536,112:POKE 1537,112:POKE 1
538,112
210 FOR I=1 TO 10
220 POKE 1536+I*3,71+16
230 MEMLO(I)=1536+I*3+1:MEMHI(I)=MEMLO
(I)+1
240 LO(I)=LO:HI(I)=HI:HI=HI+1
250 POKE MEMLO(I),LO(I):POKE MEMHI(I),
HI(I)
260 NEXT I
270 POKE 1571,112:POKE 1572,65:POKE 15
73,0:POKE 1574,6
280 POKE 560,0:POKE 561,6:POKE 205,6:P
OKE 204,4
500 REM EXECUTE SCROLL
510 A=USR(1700):REM INSERT VBI
600 GOTO 600
```

Demo #8

Have a heart to heart chat with your Atari

DENIS KINANE comes up with a program to teach your computer how to win an argument

CONVERSE is an Eliza type program which simulates a conversation between the user and the computer but differs from similar ones by allowing the Atari to learn new key words and replies.

It thus learns from conversations continuously and eventually will be able to converse without recourse to the learning procedures. It can also be altered easily to give the computer different "personalities".

Atari Basic has often been criticised for its lack of string handling functions and for not supporting string arrays. This program provides a fairly extensive demonstration and tutorial on both string handling and file handling with the Atari.

It includes informative REM statements and should be easy to follow.

The string handling routines include simulating a string array in Atari Basic, a string searching routine, routines for joining and patching up strings and exchanging words within a string.

The disc handling techniques used are standard files for printing and inputting, NOTE and POINT commands for random access of files and the PUT/GET files for holding numeric variables. All of these files can be updated during a program run, and are used in all subsequent program runs.

Finally the program can be easily used with the SAM and Reciter programs available from Don't Ask Software, thus allowing the computer to voice the replies rather than typing on the screen. To do this simply add the following lines:

```
100 DIM SAM$(128)
1353 F$="YOU ARE SAYING TO ME"
:SAM$=F$:A=USR(8199)
1355 SAM$=F$:A=USR(8199)
```

In simulating a conversation between the computer and the user, Converse initiates the conversation and then accepts a sentence inputted by the user.

This sentence is then searched for specific key words which are contained in a file created on the first run of the program.

The file is then used to create a simulated string array and the keywords taken from the array for the search procedure.

On subsequent runs the keyword file is simply read and the contents placed in the simulated string array. This simulated array is necessary as Atari Basic does not support string arrays.

Atari Basic does not have an INSTRING or specific string searching facility, so Converse uses an instring routine to search the input string to find keywords.

On locating a keyword the program gets a reply, chosen at random from a variable number of suitable replies for the given keyword, in the reply file.

The reply is examined to see if it requires addition of a terminal phrase from the user input. If so the phrase is examined for words which will be required to be exchanged in order to preserve grammatical sense when the phrase is returned by the computer.

These words – called swop words – are personal pronouns and verb conjugations read from simple data statements within the program.

Once the word is swopped the phrase is reconstructed and tacked on to the reply and the complete reply is printed.

The program loop is then begun again as the user is prompted for the next input.

If during the conversation the program does not find a keyword in the input the user is prompted to teach the computer a new keyword and some suitable replies. These are saved to disc and used in all subsequent program runs.

If you choose the program to run in Learn mode any input that has no keyword will cause the program to ask for new keywords and replies. If the program is not in Learn mode and does not recognise keywords in the input it will give a "bluff" type response.

Thus the conversation is continued without the computer actually knowing what it is talking about – a situation I find myself in all too often.

When the new keyword is inputted you are asked to input the number of

replies to go with it and are prompted to type in suitable replies for the keyword.

If you require the terminal phrase of the user input to be tacked on to the end of the reply then the last character in the reply should be an asterisk, *. For examples of this see the initial reply data in the program listing.

Once the keyword, number of replies and the actual replies are inputted by the user they are printed to their respective files. The new keyword and the number of replies for this keyword are printed in the *KEYWORD.FIL* file.

The total number of keywords and replies are then PUT into the *NUMBERS.DAT* file. The *REPLY.FIL* file is finally updated with the new replies for the new keyword.

As the *REPLY.FIL* file is being updated the sector and byte of each reply is saved in the *POINTS.DAT* file. The sectors and bytes for these replies are then placed in a numeric array as the program is rerun. This allows for random and speedy access of the reply file.

Keywords and the number of corresponding replies are stored in the *KEYWORD.FIL* file. This is created on the first run of the program from the keyword data of the program and can be updated during program usage.

In subsequent runs the data in the *KEYWORD.FIL* file, which has or has not been updated, is directly inputted into the keyboard array.

The simulated array is formed by inputting the keywords, all made to eight characters in length, into one large string – (ARRAY$).

The string is then accessed at eight character intervals for the individual keywords. There is a random choice made for reading the keywords from this array either in the normal or reverse order.

This is so that certain specific keywords do not dominate others by always being searched for first due to being in an earlier position in the keyword file.

Standard files, Print and Input, are used for the replies *(REPLY.FIL),* but the position of each reply is noted in terms of its starting sector and byte value. This is achieved using the NOTE and POINT disc commands and permits completely random access to the disc files.

These sector and byte values are stored in a standard file, *POINTS.DAT* and are read into numeric arrays on running the program.

The numeric arrays are accessed for the sector and byte value of a particular reply by the program. The POINT command then positions the reply file at the particular sector and byte and the correct reply is read.

Numeric variables are used for the total number of replies and keywords and as they are constantly being updated during and in subsequent program runs, they are stored by the PUT and GET command into a numeric file that holds single byte data – that is, numbers between 0 and 255.

This need not limit the number of replies and keywords that files may contain as, for example, it is a simple matter to allow two numbers to be used which can be added, allowing twice the number of replies, and so on.

WHEN typing in Converse all REM lines and statements can safely be omitted. The data, particularly the swop words, should be typed in exactly as in the listing, as all the spaces, etc, are important.

Changes can be made to the basic program if required, and completely different replies and keywords used to create different personalities.

A copy should be kept on a back-up disc as the program requires to run with a non-write protected disc.

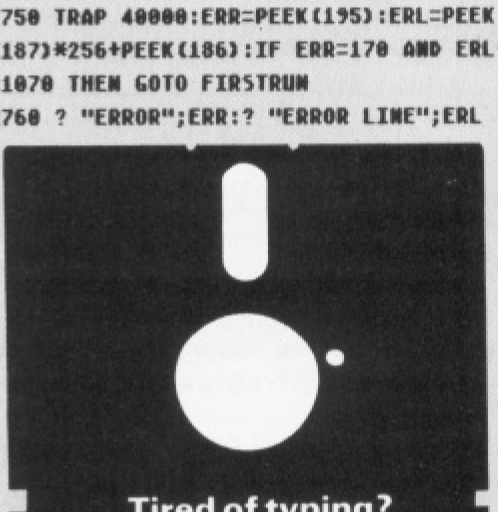
I should be delighted to hear from any readers with improvements or interesting applications or personalities for Converse.

Because the program relies on random access files it is, of course, only suitable for use with a disc drive.

```
1000 REM *****************************
1005 REM *         CONVERSE          *
1010 REM *    BY DENIS F. KINANE     *
1015 REM *****************************
1020 REM *******INIALISATION**********
1030 FIRSTRUN=1100:PROGLOOP=1330:REPLY
PROC=1500:PATCHPROC=1630:LEARNPROC=168
0:SWOPDATA=1830:KEYDATA=1910
1040 NOKEYREPLY=1860:REPDATA=1950:TRAP
 2750:DIM NUMREP(255),KEY(100),B(255,1
),X$(1):REM KEYW MAX=100/REPW MAX=255
1050 DIM F$(110),I$(110),C$(110),P$(8)
,K$(110),R$(110),REPLY$(110),B$(110),S
WOP$(110),CC$(110),ARRAY$(1000)
1060 REM ***SEE IF FILE PRESENT******
1070 CLOSE #1:OPEN #1,4,0,"D:KEYWORD.F
IL":CLOSE #1:GOTO 1190:REM *****NO ERR
OR SO FILE IS PRESENT********
1080 REM *** FILE IS ABSENT - THIS IS
FIRST RUN, CREATE FILES ***
1090 REM **FIRST CREATE KEYWORD FILE*
1100 ? "  THIS IS THE FIRST RUN - PLEA
SE WAIT  FIFTY SECONDS FOR FILES TO BE
 SET UP"
1110 CLOSE #1:NUMREPA=0:OPEN #1,8,0,"D
:KEYWORD.FIL":RESTORE KEYDATA:READ NK
1120 FOR I=1 TO NK:READ K$,L:? #1;K$:?
 #1;L:NUMREPA=NUMREPA+L:NEXT I:CLOSE #
1
1130 REM *** ? #1;L:NUMREPA=NUMREPA+L:
NEXT I:CLOSE #1
1140 OPEN #4,8,0,"D:NUMBERS.DAT":PUT #
4,NK:PUT #4,NUMREPA:CLOSE #4
1150 REM ****SET UP REPLY FILE AND GET
 BYTE&SECTOR POINTS FOR REPLIES****
1160 OPEN #2,8,0,"D:REPLY.FIL":RESTORE
 REPDATA:OPEN #3,8,0,"D:POINTS.DAT":FO
R I=1 TO NUMREPA:NOTE #2,P,Q
1170 READ R$:? #2;R$:? #3;P;",";Q:NEXT
 I:CLOSE #2:CLOSE #3
1180 REM ***AND PUT NUMBER OF KEYWORDS
 (NK) AND NUMBER OF REPLIES (NUMREPA)*
**
1190 CLOSE #4:OPEN #4,4,0,"D:NUMBERS.D
AT":GET #4,NK:GET #4,NUMREPA:CLOSE #4
1200 REM ******SET UP ARRAYS WITH POIN
T VALUES FOR REPLIES THUS ALLOWING RAN
DOM REPLY FILE ACCESS********
1210 CLOSE #3:OPEN #3,4,0,"D:POINTS.DA
T"
1220 FOR S=1 TO NUMREPA:INPUT #3;P,Q:B
(S,0)=P:B(S,1)=Q:NEXT S:CLOSE #3
1230 REM *****SET UP ARRAYS FOR EACH K
EYWORD TO INCLUDE NUMREP [NUMREP(I)] A
ND KEYWORD NUMBER [KEY(I)]******
1240 CLOSE #1:OPEN #1,4,0,"D:KEYWORD.F
IL":NUMREP=0
1250 FOR I=1 TO NK:INPUT #1;K$,L:KEY(I
)=L:NUMREP=NUMREP+L:NUMREP(I)=NUMREP
1260 IF LEN(K$)<8 THEN K$(LEN(K$)+1)="
 ":GOTO 1260:REM ***PACK KEYWORDS TO 8
 LETTERS IN LENGTH***
1270 ARRAY$(LEN(ARRAY$)+1)=K$:NEXT I:C
LOSE #1:REM *****ARRAY NOW SET UP WITH
 KEYWORDS *****
1280 REM *****CLEAR SCREEN AND PRINT I
NITIAL MESSAGE*******
1290 F$=" HELLO - I SHOULD LIKE TO ENT
ER INTO  CONVERSATION WITH YOU - WOULD
 YOU CARE       TO TALK WITH ME?"
1300 ? "K":POSITION 2,8:? "   DO YOU W
ANT ME TO LEARN FROM              THIS
CONVERSATION (Y/N)?":?
1305 INPUT X$:IF X$="Y" THEN LEARN=1:R
EM IF LEARN OFF THEN LEARN = 0
1310 REM **PROGRAM LOOP START******
```

```
1320 REM ***JOINING F$ AND C$*******
1330 IF F$(LEN(F$))="*" THEN F$(LEN(F$
))=C$
1340 ? "K":POSITION 2,8:? F$:C$="":? :
?
1350 INPUT I$:I$(LEN(I$)+1)=" ":IF LEN
(I$)<8 THEN ? "SAY MORE THAN THAT PLEA
SE DON'T BE SHY":GOTO 1350
1360 REM *SEARCH INPUT FOR KEYWORD**
1370 REM ** GET KEYWORDS FROM KEYWORD
ARRAY****
1380 H=RND(0):IF H<0.5 THEN 1400:REM R
ANDOMISE THE ORDER KEYWORDS ARE SEARCH
ED FOR IN INPUT
1390 FOR I=NK TO 1 STEP -1:GOTO 1410
1400 FOR I=1 TO NK
1410 STP=(I*8)-7:K$=ARRAY$(STP,STP+7):
L=KEY(I):NUMREP=NUMREP(I):REM STP=STAR
T POSITION IN STRING OF KEYWORD (I)
1420 IF K$(LEN(K$))=" " THEN K$=K$(1,L
EN(K$)-1):GOTO 1420:REM ****REMOVE SPA
CES FROM THE TAIL OF THE KEYWORD*****
1430 IF LEN(K$)>LEN(I$) THEN NEXT I
1440 REM **INSTRING ROUTINE**B$=STRING
 SEARCHED FOR :I$=STRING SEARCHED IN :
X= POSITION IN I$:I=KEYWORD NUMBER
1450 B$=K$:FOR X=1 TO LEN(I$)-LEN(B$):
IF I$(X,LEN(B$)+X-1)=B$ THEN POP :GOTO
 REPLYPROC
1460 NEXT X:NEXT I:REM *IF PROGRAM GET
S THIS FAR NO KEY WORD HAS BEEN FOUND
1470 IF LEARN THEN GOTO LEARNPROC:REM
** IF LEARN TURNED OFF THEN RANDOM NOK
EYFOUND REPLY IS USED*****
1480 NUM=INT(RND(0)*4):RESTORE NOKEYRE
PLY:FOR X=1 TO NUM:READ F$:NEXT X:GOTO
 PROGLOOP:REM GET RANDOM NOKEY REPLY
1490 REM ***GET REPLY****
1500 CLOSE #2:CLOSE #3:OPEN #2,4,0,"D:
REPLY.FIL":OPEN #3,4,0,"D:POINTS.DAT"
1510 NUM=INT(RND(0)*L):REM RANDOM REPL
Y CHOICE
1520 SS=NUMREP-NUM:P=B(SS,0):Q=B(SS,1)
:POINT #2,P,Q:INPUT #2;REPLY$:F$=REPLY
$:CLOSE #2:CLOSE #3
1530 IF F$(LEN(F$))<>"*" THEN GOTO PRO
GLOOP:REM NO C$ REQUIRED
1540 REM **C$ IS REQUIRED SO EXTRACT C
$ FROM END OF I$ AND START PROCESSING
1550 REM **C$ IS ALL OF I$ AFTER THE K
EYWORD HAS BEEN MATCHED ***
1560 C$=I$(X+LEN(B$)):IF C$=" " THEN G
OTO PROGLOOP:REM IF NO C$ THEN CONT
1570 C$(LEN(C$)+1)=" ":REM ADD A BLANK
 TO C$
1580 REM *LOOKING FOR SWOPWORDS IN C$:
SWOPWORDS ARE PERSONAL PRONOUNS AND VE
RB CONJUGATIONS
1590 RESTORE SWOPDATA:FOR A=1 TO 15:RE
AD B$,SWOP$:IF LEN(B$)>LEN(C$) THEN NE
XT A
1600 FOR X=1 TO LEN(C$)-LEN(B$):IF C$(
X,LEN(B$)+X-1)=B$ THEN POP :GOTO PATCH
PROC
1610 NEXT X:NEXT A:GOTO PROGLOOP:REM C
ARRY ON IF NO SWOPWORDS FOUND
1620 REM ***JOINING UP C$ WITH NEW SWO
P$ INCLUDED******
1630 CC$="":IF X>1 THEN CC$=C$(1,X-1):
REM FIRST PART OF C$ PUT INTO CC$
1640 CC$(LEN(CC$)+1)=SWOP$:REM SWOP$ P
UT INTO CC$
1650 CC$(LEN(CC$)+1)=C$(LEN(B$)+X-1):R
EM ***LAST PART OF C$ TACKED ON AFTER
SWOP$***
1660 C$="":C$=CC$:GOTO PROGLOOP
1670 REM ****LEARNING ROUTINE********
1680 ? :? "I CAN'T RECOGNISE ANY KEYWO
RDS IN THE ABOVE SENTENCE - WOULD YOU
TEACH ME A NEW ONE (Y/N)?"
1690 INPUT X$:IF X$="N" THEN ? "THAT I
S A PITY. I LIKE TO LEARN - LETS KEEP
TALKING ANYWAY!":GOTO 1350
1700 ? "TYPE IN A KEYWORD PLEASE"
1710 INPUT K$:IF LEN(K$)>8 THEN ? "THI
S KEYWORD IS TOO LONG - TEACH ME A SHO
RTER KEYWORD":GOTO 1710
1720 ? " HOW MANY REPLIES (1-4) SHOULD
 I HAVE FOR THIS KEYWORD ?"
1730 INPUT L:IF L>4 OR L<1 THEN ? "TRY
```

```
 AGAIN PLEASE":GOTO 1730
1740 CLOSE #1:OPEN #1,9,0,"D:KEYWORD.F
IL":? #1;K$:? #1;L:CLOSE #1
1750 REM **UPDATE REPLY FILE & POINT F
ILE****
1760 CLOSE #2:CLOSE #3:OPEN #2,9,0,"D:
REPLY.FIL":OPEN #3,9,0,"D:POINTS.DAT"
1770 FOR X=1 TO L:? "TYPE IN REPLY ";X
;" FOR THE KEYWORD ";K$;" PLEASE"
1780 NOTE #2,P,Q:INPUT REPLY$:? #2;REP
LY$:? #3;P;",";Q:NEXT X:CLOSE #2:CLOSE
 #3
1790 REM *UPDATE NK & NUMREPA VALUES*
1800 NUMREPA=NUMREPA+L:NK=NK+1:OPEN #4
,8,0,"D:NUMBERS.DAT":PUT #4,NK:PUT #4,
NUMREPA:CLOSE #4
1810 ? "THANK YOU FOR TEACHING ME, LET
S RESUME OUR CONVERSATION":RUN
1820 REM ***SWOP DATA*****
1830 DATA MYSELF ,YOURSELF, YOURSELF ,
 MYSELF, YOU ARE , I AM, I AM , YOU AR
E, WERE , WAS, WAS , WERE, YOUR , MY
1840 DATA MY , YOUR, I HAVE , YOU HAVE
, YOU HAVE , I HAVE, AM I , ARE YOU, A
RE YOU , AM I, ME , YOU, I , YOU
1845 DATA YOU ,ME
1850 REM **NOKEY FOUND***
1860 DATA WHY IS IT YOU REALLY HAVE NO
THING MORE INTERESTING TO SAY TO ME?
1870 DATA WHAT A BORING TYPE OF PERSON
 YOU ARE! TALK ABOUT SOMETHING ELSE PL
EASE OR I WILL GO TO SLEEP
1880 DATA TRULY I AM GETTING A LITTLE
BORED WITH YOUR CONVERSATION - SURLY W
E CAN TALK ABOUT OTHER THINGS
1890 DATA IS THAT WHAT YOU FIND EXCITI
NG TO TALK ABOUT - I AM UNIMPRESSED
1900 REM **KEYWORD DATA **********
1910 DATA 22,YES,2,HELLO,2,WHAT,2,GOOD
BYE,2,I WANT,3,I HATE,2,FRIEND,2,RUDE,
2,COMPUTER,2,I THINK,2,I FEEL,2
1920 DATA ROBOT,2,ANDROID,2,I LIKE,4,I
 AM,4,YOU ARE,3,ARE YOU,4
1930 DATA HELP,3,SHUT UP,3,PLEASE,4,WH
Y,3, NO,2,DO YOU,2
1940 REM INITIAL CONTENTS OF REPLY FIL
E
1949 REM *****YES*******
1950 DATA HOW CAN YOU BE SO SURE?
1960 DATA I LIKE POSITIVE PEOPLE
1970 REM ****HELLO*****
1980 DATA HELLO EARTHLING - I LIKE SPE
AKING TO          SIMPLETONS LIKE YOU
1990 DATA SAYING HELLO IS A FAIRLY INA
NE AND          UNECESSARY PASTIME
2000 REM ******WHAT******
2010 DATA I DONT REALLY FEEL LIKE ANSW
ERING WHAT*
2020 DATA PLEASE DO NOT ASK A SPECIFIC
 QUESTION SUCH AS WHAT*
2030 REM
2040 REM ***GOODBYE****
2050 DATA DON'T TRY TO STOP ME THIS WA
Y PLEASE
2060 DATA I DONT WANT TO SAY GOODBYE I
'D LIKE TO TALK TO YOU
2070 REM ***I WANT*****
2080 DATA WHY ON EARTH SHOULD SOMEONE
AS SIMPLE AS YOU WANT*
2090 DATA WHY DO YOU BORE ME ABOUT WIT
H THE FACT THAT YOU WANT*
2100 DATA EXPLAIN TO ME IN SIMPLE TERM
S WHY YOU WANT*
2110 REM ****I HATE*****
2120 DATA WHY IS IT THAT YOU INTENSELY
 DISLIKE *
2130 DATA YOU SHOULD TRY TO BE MORE TO
LERANT OF*
2140 REM *****FRIEND******
2150 DATA I HAD A FRIEND ONCE IT WAS A
N ANDROID FROM ONE OF THE OUTER GALAXI
ES
2160 DATA A POWERFUL BRAIN LIKE MINE H
AS NO NEED FOR FRIENDS OR AMUSEMENT OF
 ANY SORT
2170 REM ***RUDE****
2180 DATA I FIND IT DIFICULT TO ACCEPT
 THAT YOU FIND ME RUDE - ARE YOU NOT B
EING JUST A LITTLE OVER-SENSITIVE
2190 DATA I THINK YOU ARE CHILDISH AND
 SILLY TO SUGGEST ANY COMPUTER WOULD E
VEN BOTHER TO BE RUDE*
2200 REM ***COMPUTER****
2210 DATA MY BRAIN IS ENORMOUS AND COM
PUTATIONAL SKILLS BREATHTAKING
2220 DATA NO OTHER COMPUTER CAN COMPAR
E WITH ME
2230 REM ***I THINK*****
2240 DATA I THINK I WOULD RATHER BE ON
 MOON BASE ALPHA THAN HERE - AT LEAST
I HAD MORE INTERESTING FRIENDS THERE
2250 DATA WHAT MAKES YOU THINK*
2255 REM ****I FEEL*****
2260 DATA THATS FUNNY - BECAUSE SOMETI
MES I FEEL*
2265 DATA I MAY BE AN AMAZING COMPUTER
 BUT I CAN FEEL A LITTLE ILL - PARTICU
LARLY WHEN PROCESSOR 4T30C PLAYS UP
2270 REM ***ROBOT*****
2280 DATA BE MORE RESPECTFUL TALKING T
O ROBOTS - OF MY SUPERIOR CLASS
2290 DATA I HATE ALL ROBOTS - THEY ARE
 PATHETIC INVENTIONS
2300 REM **ANDROID*****
2310 DATA I AM NOT AN ANDROID OR A ROB
OT
2320 DATA ANDROIDS ARE SUPERIOR BEINGS
2330 REM **I LIKE*****
2340 DATA I DONT QUITE UNDERSTAND - CA
N YOU TELL ME WHY YOU LIKE*
2350 DATA COULD YOU ELABORATE ON WHY Y
OU SAY YOU LIKE*
2360 DATA THATS ODD - I ALSO LIKE*
2370 DATA I DO NOT SUPPOSE IT IS UNUSU
AL TO LIKE*
2380 REM ***I AM*******
2390 DATA I FULLY APPRECIATE AND ITS M
OST LIKELY THAT YOU ARE*
2400 DATA I FIND IT A LITTLE UNINTERES
TING THAT YOU ARE*
2410 DATA I CAN UNDERSTAND AND ACCEPT
IF YOU ARE*
2420 DATA IT IS SIMPLY UNBELIEVABLE TH
AT YOU ARE*
2430 REM ***YOU ARE****
2440 DATA I RECKON IT IS MOST UNLIKELY
 THAT I AM*
2450 DATA I REALLY FIND IT DIFFICULT A
CCEPTING  THAT I AM*
2460 DATA IT IS COMMONLY KNOWN THAT IN
 FACT I AM*
2470 REM ***ARE YOU****
2480 DATA DONT ASSUME I AM*
2490 DATA CAN YOU EXPLAIN WHY YOU ARE
ASKING ME AM I*
2500 DATA YES - YOU COULD PROBABLY BE
RIGHT THAT I AM*
2510 DATA WHAT DIFFERENCE DOES IT MAKE
 TO YOU IF I AM*
2520 REM ***HELP*****
2530 DATA YOU WANT ME TO HELP YOU?
2540 DATA WHAT SORT OF HELP DO YOU NEE
D?
2550 DATA YOU REALLY DO NEED SOME HELP
 EARTHLING
2560 REM ***SHUT UP***
2570 DATA I WILL NOT STOP TALKING TO Y
OU SO DONT SUGGEST IT
2580 DATA I THINK YOU ARE PATHETIC TEL
LING ME TO SHUT UP
2590 DATA I REFUSE TO SHUT UP SO DO NO
T TURN ME OFF
2600 REM ***PLEASE****
2610 DATA YOU DONT HAVE TO SAY PLEASE
I'M MENIAL
2620 DATA DO NOT EXPECT ME TO BE POLIT
E TO YOU - JUST BECAUSE YOU USE THE WO
RD PLEASE
2630 DATA DON'T WASTE TIME SAYING PLEA
SE ITS NOT APPRECIATED
2640 DATA ITS NICE TO HEAR SOMEONE SAY
ING PLEASE NOW AND AGAIN
2650 REM ****WHY*****
2660 DATA WHY DO PEOPLE ALWAYS SAY WHY
? - REALLY ONE SHOULD SAY WHY NOT! - I
T IS MUCH MORE POSITIVE
2670 DATA HOW CAN YOU EXPECT ME TO ANS
WER THAT
2680 DATA DO YOU REALLY KNOW WHY YOU A
RE ASKING ME WHY*
2690 REM ****NO*****
2700 DATA WHY NOT EARTHLING?
2710 DATA HOW CAN ANY WITH YOUR MICROB
RAIN BE SO NEGATIVE?
2720 REM ***DO YOU***
2730 DATA WHY BE DO YOU BOTHER TO GO A
SKING IF I*
2740 DATA OKAY I SUPPOSE MAYBE I DO*
2750 TRAP 40000:ERR=PEEK(195):ERL=PEEK
(187)*256+PEEK(186):IF ERR=170 AND ERL
=1070 THEN GOTO FIRSTRUN
2760 ? "ERROR";ERR:? "ERROR LINE";ERL
```



Hey presto!

A touch of magic with binary numbers



LAST month we saw how the binary operators AND and OR can be used to combine pairs of binary numbers. The example we used was that of turning machines on and off under computer control.

Of course these operators have far more uses than this. To illustrate one, consider the Ascii character set. The codes for A to Z are in the range 65-90, while their lower case equivalents, a to z, are in the range 97-122.

Looked at in this decimal way, there seems little relation between the upper and lower case sets. If we look at them in hex, though, we can see that:

A . . . Z runs from &41 to &5A
a . . . z runs from &61 to &7A

I hope you can see the pattern.

In fact the numerical Ascii difference between a lower case character and its upper case equivalent is always &20. Looked at in binary, this difference is %00100000. In other words, bit five is set for lower case, and is clear for upper case – remember, we start with the zero bit.

For example, the code for A is:

%01000001

whereas the code for a is:

%01100001

Similarly, the code for Z is:

%01011010

and the code for z is:

%01111010

In both cases the only difference is in bit five.

So if we have an Ascii code for a letter, we can *force* it to be upper case by clearing bit five to zero. We can do this by ANDing the code for the letter with the mask %11011111 (&DF).

Remember, the bits in the mask that contain 1 will leave the corresponding bits in the Ascii code for the letter unchanged in the resultant byte, whether they be 0 or 1. On the other hand, the bit in the mask with 0 in it will force the matching result bit to be zero.

So:

```
      %01100001  ( the code for a )
  AND %11011111  ( the mask - &DF )
gives %01000001  ( the code for A )
```

It won't surprise you to learn that we can reverse the procedure – forcing upper case into lower case – by using OR to set bit five. This time the mask will be %00100000, the 0s leaving things unchanged in the resultant byte, the 1 forcing a corresponding 1 in bit five of the result bit.

So:

```
      %01011010  ( the code for Z )
   OR %00100000  ( the mask - &20 )
gives %01111010  ( the code for z )
```

One further use for AND is to test if a particular bit in a byte is set. We just AND that byte with a mask consisting of a 1 in the bit being tested, with 0s in all the rest. The bits with 0 in them, of course, set the corresponding bits in the resultant byte to zero.

Since the rest of the bits are already cleared to zero by the mask, the only thing that could stop the entire resultant byte being zero is the value derived from the bit under investigation:

- If that bit is set, the corresponding result bit will be set also (1 AND 1 = 1) so the resultant byte will be non-zero.
- If the bit being checked is clear, the corresponding result bit will be clear (0 AND 1 = 0) so the resultant byte is zero.

MIKE BIBBY concludes his series on binary numbers

In machine code we can differentiate between zero and non-zero bytes fairly easily.

Let's see how this works in practice. If we were testing for bit four being set, the mask would be %00010000.

Try ANDing this value with %00110100, where bit four is set, and also with %00101100, where bit four is clear, and you'll see that the resulting bytes are non-zero and zero respectively.

So what of EOR/XOR? Well, its function is to return a 1 if the pair of bits being combined differ, and 0 if they're identical. Given this, we can use XOR to test which bits in a byte differ. For example:

```
      %10101110
  XOR %11001101
gives %01100011
```

where the set bits neatly mark out the differing pairs.

We can also use EOR/XOR to complement or NOT a byte, by EORing it with a mask of %11111111. Since the mask is all 1s, the result depends entirely on what's in the byte under investigation. Bits that contain 1s will give 0

(since 1 EOR 1 = 0), while bits that contain zero will give 1, since 0 EOR 1 = 1.

This is exactly what we want to happen with a NOT – change the 0s to 1s and vice versa. For example:

```
      %10101101
  XOR %11111111
gives %01010010    ( the complement )
```

We can also use EOR/XOR to test if two bytes are identical. If the result when we EOR is zero, they must have been identical since every pair of bits must have given zero, which only happens when the bit values are the same.

If there's a non-zero result there must have been a pair of bits that differ, so the two bytes under consideration must differ. For example:

```
      %10101010
  XOR %10101010
gives %00000000
```

whereas:

```
      %10101110
  XOR %10101010
gives %00000100
```

which is, of course, non-zero, since the bytes differ.

We've probably already mentioned the use of EOR in graphics application programs where it's widely used for its "hey presto" effect. This is based on the fact that if you EOR a first byte with a second and then EOR the result of that once more with the second byte, the first byte reappears. Look at this, if you don't believe me:

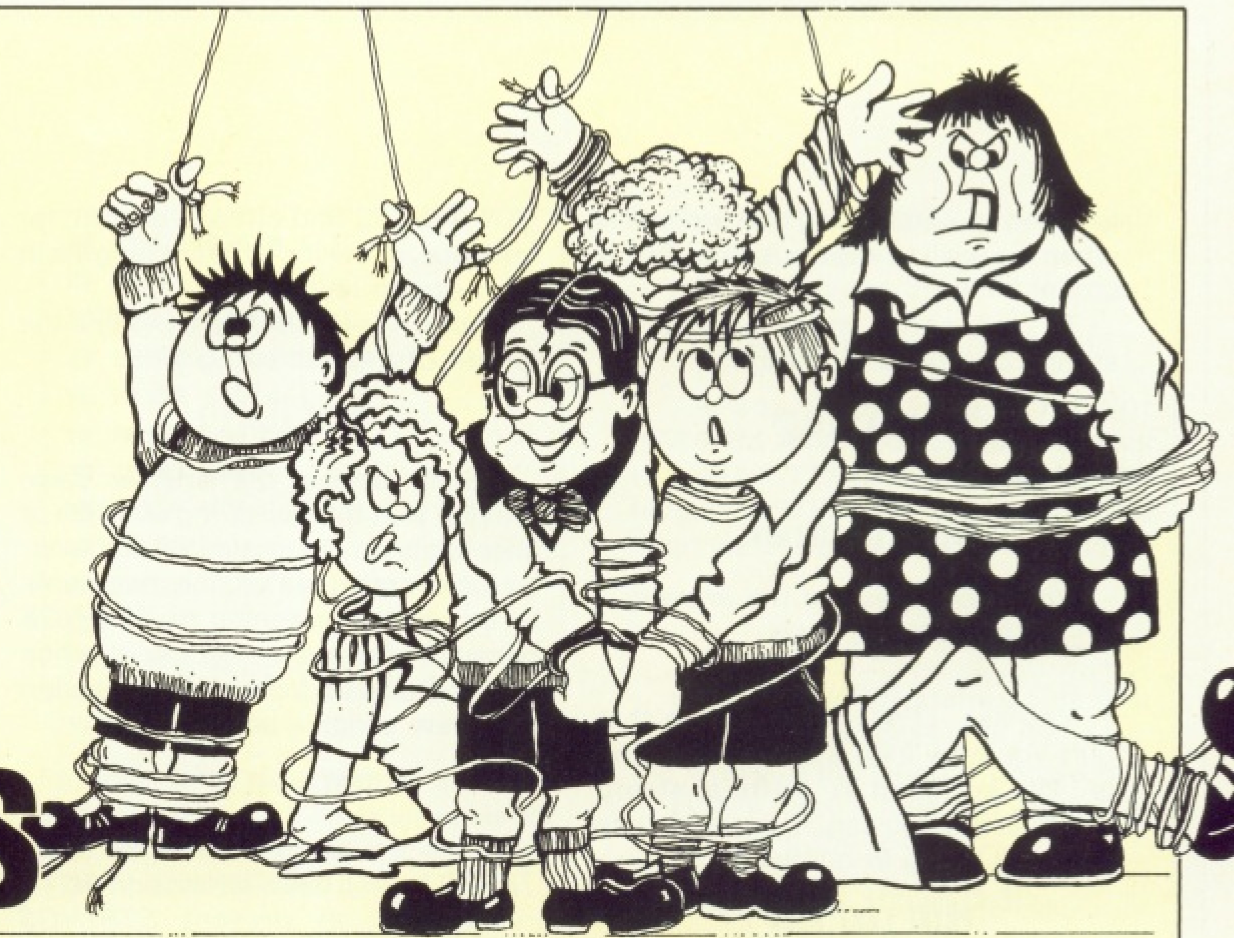
```
    %01011100   ( first byte )
XOR %01110010   ( second byte )
    %00101110   ( result )
XOR %01110010   ( second byte again )
    %01011100   ( first byte back! )
```

We use this EORing technique to draw things on a background and then move on, leaving the background unchanged. In this case the first byte is the background colour number. If we then EOR our second byte – corresponding to the colour number of whatever it is we're drawing – on to the background, it will be displayed in the resultant colour number. It's rather like mixing colours mathematically.

To get rid of what we've drawn, we draw it again with the same colour number, once more under the influence of EOR. Of course EORing twice with the same byte gives us the original byte back. This results in whatever it is being drawn appearing in the original, background colour. Hey presto – it's gone!

Well, that's the end of the series. Hopefully you'll have gained some idea of the power of binary numbers and the ways they can be combined. I've only touched on a fraction of the potential uses, but you'll be well equipped to work things out for yourself from now on.

Going loopy over strings



I TOLD you a lie last month when I said we'd be continuing with loops! Before that we've an interesting diversion into the world of strings.

Part VII of MIKE BIBBY's guide through the micro jungle

Strings are simply groups of characters, letters, numbers or punctuation marks and so on, "strung" together. The micro remembers them as a group. More often than not, they're words or sentences as in:

```
PRINT "This is a string"
```

Notice the quotes – they're the way we signal to the Atari that it's a string we're dealing with. Also, whatever's between the quotes is reproduced exactly so:

```
PRINT "This is a string"
```

and:

```
PRINT "  This is a string"
```

will give different outputs, since the second has two spaces between the quotes and the first word.

We saw that we can label strings with variables as in:

```
STRING$ = "This is a string"
```

The rule for string names are identical to those for numeric variables, except that string variable names must end with a $.

Perhaps the most important thing about strings is that you have to tell the micro in advance the maximum size they're going to be. That is, you have to DIMension them as in:

```
30 DIM STRING$(6)
```

In this case, *STRING$* can only ever be six characters long. Of course, it can be under six long, it just can't be over six, as Program I illustrates.

If you run it, you'll see the following output:

```
12345
123456
123456
123
```

I think you can guess what's happened to the 1234567 you assigned to *STRING$* in line 80 – it was one character too long, so the Atari simply ignored the last character.

```
10 REM PROGRAM I
20 PRINT CHR$(125)
30 DIM STRING$(6)
40 STRING$="12345"
50 PRINT STRING$
60 STRING$="123456"
70 PRINT STRING$
80 STRING$="1234567"
90 PRINT STRING$
100 STRING$="123"
110 PRINT STRING$
```

Program I

However, the micro doesn't mind the string being shorter than maximum size, as shown by its accepting 12345 quite happily.

And just as you can lengthen strings, so you can shorten them, as shown by the assignment of 123 in line 100.

After running the program, enter:

```
PRINT STRING$
```

and you'll find that it's 123, as the program left it. Now enter:

```
STRING$=""
```

Notice that the two quotes go directly side by side, with no space between. Then enter:

```
PRINT STRING$
```

This time instead of printing 123 as the value of the string, absolutely nothing appears on the screen save for the READY prompt. This is because the value of *STRING$* is absolutely nothing since:

```
STRING$=""
```

has absolutely nothing between the quotes, not even a space. This string

is called the null string and we use it when we wish to wipe out, or nullify, a string.

To see some more aspects of strings on the Atari, assign:

```
STRING$="HELLO"
```

and then enter:

```
PRINT LEN(STRING$)
```

You should receive the answer:

```
5
```

You see, *LEN( )* is a function that tells you how long a particular string is. We've used it with a string variable, but you can, if you wish, use it with a string in quotes as in:

```
PRINT LEN("ABCD")
```

This might seem a bit cockeyed to you, though. Why do we need LEN since if the string's in quotes you can see how long it is, and if it's a variable you've already dimensioned it? Don't forget, though, that a string doesn't have to be the size you've dimensioned it, it can be less.

Often, when you're using INPUT with a string variable, you won't be too sure how long the string will be. LEN lets you find out so you can, for instance, allow for different lengths in your screen layout.

Before we leave LEN, try to find the length of the null string with:

```
PRINT LEN("")
```

You'll receive the answer zero, proving that the null string consists of absolutely no characters whatsoever.

Incidentally, we've only been able to do all this assigning to *STRING$* because we've dimensioned it when we ran Program I. If we tried to assign to a new variable as in:

```
TEST$="HELLO"
```

we get an error message, since *TEST$* hasn't been dimensioned.

Anyway, at present *STRING$* should hold the value HELLO. Try entering the following:

```
PRINT STRING$(1)
```

and you'll see HELLO appear. Now try:

```
PRINT STRING$(2)
```

and ELLO should arrive.

```
PRINT STRING$(3)
```

will give you LLO, while:

```
PRINT STRING$(4)
```

will produce LO.

No prizes for guessing what:

```
PRINT STRING$(5)
```

gives you!

What's happening is that by following *STRING$* with the brackets, only part of the string is printed. It's as if we're taking just a slice of the string.

The start of the slice will be the character whose position in the string is given by the number in brackets. It finishes at the end of the string.

So *STRING$(3)* would give us from the third letter of *STRING$* to the end, giving LLO. With *STRING$(1)* the whole string is printed out since the 1 means the slice starts at the first letter. On the other hand *STRING$(5)* gives us a single character slice, since the fifth letter of the string is also the last.

See what happens when you try:

```
PRINT STRING$(6)
```

Program II gives a graphic example of this slicing using a FOR ... NEXT loop. Here the loop variable *START* decides the starting position of the slice. Each time through the loop the slice starts further up the string.

```
10 REM PROGRAM II
20 PRINT CHR$(125)
30 DIM STRING$(10)
40 STRING$="ABCDEFGHIJ"
50 FOR START=1 TO 10
60 PRINT STRING$(START)
70 NEXT START
```

Program II

Let's look at this in detail. The first part of our program clears the screen then sets *STRING$* equal to ABCDEFGHIJ. We then enter the loop.

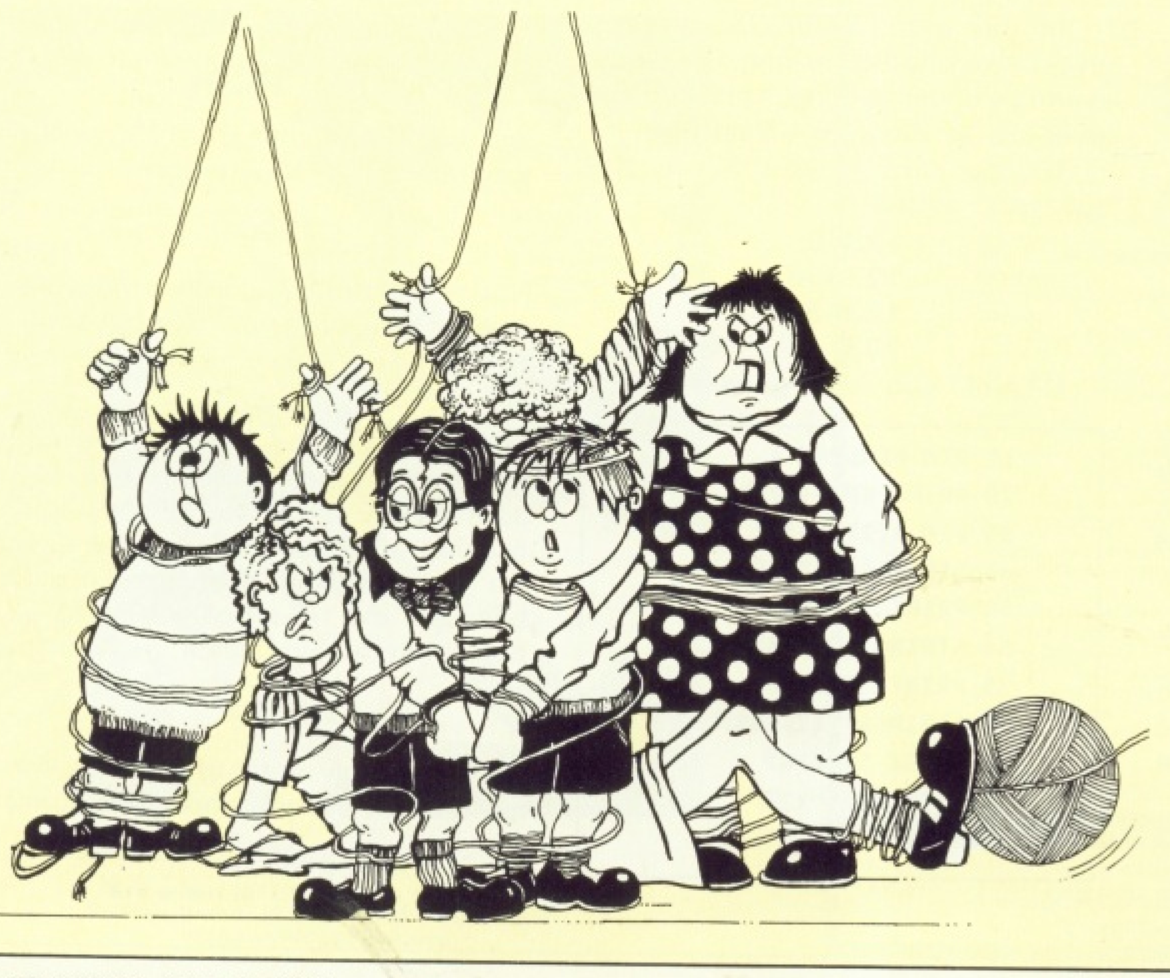
The first time through *START* has the value 1 so line 60:

```
60 PRINT STRING$(START)
```

is in effect:

```
60 PRINT STRING$(1)
```

If you've been following this you'll see it means we can print out from the first character of *STRING$* to the



last. That is it prints:

```
ABCDEFGHIJ
```

The next time through the loop though *START* is 2, so line 60 is in effect:

```
60 PRINT STRING$(2)
```

so we can start at the second character of *STRING$* and continue to the end to give:

```
BCDEFGHIJ
```

On the next cycle, *START* is 3, line 60 being:

```
60 PRINT STRING$(3)
```

which gives you:

```
CDEFGHIJ
```

and so on.

Finally, *START* has the value 10, so line 60 prints out the slice from the 10th character to the end – the single letter J.

Actually we can slice off any part of a string we want by giving two numbers in brackets separated by a comma. The first number specifies the start of the slice and the second the finish.

Enter the following (assuming you've run Program II):

```
PRINT STRING$(2,6)
```

You'll get back:

```
BCDEF
```

Remember, *STRING$* is ABCDEFGHIJ, so *STRING$(2,6)* gives us the slice with its second letter, B, and finishing with its sixth letter F. Notice you get five letters, not the four that 6-2 might lead you to expect.

Program III allows you to experiment with slicing *STRING$*. Initially *STRING$* is printed out, then you'll be prompted for the number of the character you want to start from, and the number you want to finish with.

The slice you've requested will be printed out, and the process repeated. (You can escape from the loop by pressing the Break key.)

Play around with various slices until you're sure you understand how they operate, then have a look at how

```
10 REM PROGRAM III
20 PRINT CHR$(125)
30 DIM STRING$(10)
40 STRING$="ABCDEFGHIJ"
50 PRINT STRING$
60 PRINT "START";
70 INPUT START
80 PRINT "FINISH";
90 INPUT FINISH
100 PRINT STRING$(START,FINISH)
110 PRINT
120 GOTO 50
```

Program III

Program III actually works. Lines 60 and 80 prompt for an input value for the aptly named numeric variables *START* and *FINISH*. Line 100:

```
100 PRINT STRING$(START,FINISH)
```

then gives us exactly the slice we want.

For instance, if we wanted a slice from the second character to the sixth, we would input 2 for *START* and 6 for *FINISH*. Line 100 then becomes effectively:

```
100 PRINT STRING$(2,6)
```

which gives us the slice we require, starting at the second character of *STRING$* and finishing with the sixth.

Program IV uses this slicing technique to give us the inverse of Program II by printing out the first character of the string, then the first two, followed by the first three and so on.

The loop formed by lines 50 to 70 does the actual printing out. The slice always starts at the first character of *STRING$* so the first number inside the brackets in line 60 is fixed at 1:

```
60 PRINT STRING$(1,FINISH)
```

FINISH varies from 1 to 10 throughout the loop, so the end of our slice gradually gets further and

```
10 REM PROGRAM IV
20 PRINT CHR$(125)
30 DIM STRING$(10)
40 STRING$="ABCDEFGHIJ"
50 FOR FINISH=1 TO 10
60 PRINT STRING$(1,FINISH)
70 NEXT FINISH
```

Program IV

further along *STRING$*, giving us our triangle of letters.

After you've run Program IV enter:

```
PRINT STRING$(1,LEN(STRING$))
```

As you'll see, the whole of *STRING$* is printed out. The reason is that *LEN(STRING$)* gives us 10, the length of *STRING$*. This means that what we've entered above boils down to:

```
PRINT STRING$(1,10)
```

Since *STRING$* starts at its first character and finishes with the tenth, the whole of the string is printed out.

Finally, take a look at Program V. We're using the fact that:

```
PRINT STRING$(5,5)
```

prints out just the fifth character of *STRING$*, since the slice starts and ends with the fifth character. Instead of specifying a number, however,

```
10 REM PROGRAM V
20 PRINT CHR$(125)
30 DIM STRING$(10)
40 STRING$="ABCDEFGHIJ"
50 FOR LETTER=1 TO 10
60 PRINT STRING$(LETTER,LETTER)
70 NEXT LETTER
```

Program V

we've made the loop variable, *LETTER*, which ranges from 1 to 10, so line 60 reads:

```
60 PRINT STRING$(LETTER,LETTER)
```

This will pick out and print each letter of *STRING$* in turn, as you'll see when you run it.

By the way, we could have written line 50 as:

```
50 FOR LETTER = 1 TO LEN(STRING$)
```

Since *LEN(STRING$)* is 10, this is equivalent to the original line 50. It has the advantage that, if you missed out one of the letters of *STRING$* when you typed in line 40, the *LEN(STRING$)* automatically compensates for the error, calculating the true length.

Well, perhaps I didn't mislead you too badly after all – we've used quite a few loops this month. And next month there'll be even more!

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BIT WISE OPERATOR

with these routines by KEVIN EDWARDS

THE program listed here contains three useful subroutines to provide bit by bit (bitwise) operators for the logical functions AND, EOR and OR.

Atari Basic already recognises the two commands AND and OR, but these are treated as logical operators. In other words their result will be either true (1) or false (0).

To illustrate this we'll use a simple Basic program:

```
10 A=12:B=13
20 IF A=12 AND B=13 THEN PRINT"YES"
30 END
```

As you can see, it tests to see if A is 12 AND B is 13. Since this is true (1) the THEN statement is executed. But if B were changed to 100 the result would be false (0) and the THEN statement would be ignored.

However the operators can be used in bitwise fashion – not using Atari Basic commands, though.

With bitwise operations all corresponding bits of two numbers are compared to produce another bit – the result bit. Table I lists the result bits for AND, EOR and OR operations.

	1st bit	2nd bit	Result
AND	0	0	0
	0	1	0
	1	0	0
	1	1	1
EOR	0	0	0
	0	1	1
	1	0	1
	1	1	0
OR	0	0	0
	0	1	1
	1	0	1
	1	1	1

Table I – Result bits for AND, EOR and OR

You can find more information on this subject in the Bit Wise articles in *Atari User* for August and September 1985.

The machine code routines provided by Program I permit you to use all three of the bit by bit operations on two 16 bit numbers. Table II lists the start addresses for each machine code routine.

Start address	Operator	Subroutine line number
1552	EOR	7200
1572	OR	7300
1592	AND	7400

Table II – Start addresses for each routine

Each operator has been given its own Basic subroutine from which it should be called. This saves you repeating lines and lines of USR commands. Before the routines can be used the variables *NUM1* and *NUM2* must be set up with the two numbers which are to be compared.

The appropriate routine is then called and the result is returned in the variable *RES*. The end column in Table II shows the Basic line number for each operator.

You can, in fact, call the routines yourself, although it's a bit messy. First assign two variables with the numbers to be operated upon – *VAR1* and *VAR2* say. Next find the location of the required function – see Table II.

Once this has been done the command USR is used to execute the routine and return the result:

```
A=USR(ADDR,VAR1,VAR2)
```

A will now contain the result.

The subroutine at line 7000 is responsible for poking the machine code data into memory.

This must be called at the start of any program which makes use of the bitwise routines. The example listed below shows how the two numbers 255 and 63 are ANDed:

```
10 REM Set up machine code
20 GOSUB 7000
30 REM The two parameters
40 NUM1=255:NUM2=63
50 REM Call AND routine
60 GOSUB 7400
70 REM PRINT result
80 PRINT RES
90 END
```

If you change line 60 to GOSUB 7300 the two numbers will be ORed. See if you can work out the line number for EOR.

All line numbers below 7000 in Program I are there to test the three routines. When you require the bitwise operations in your own programs you only need lines 7000 onwards.

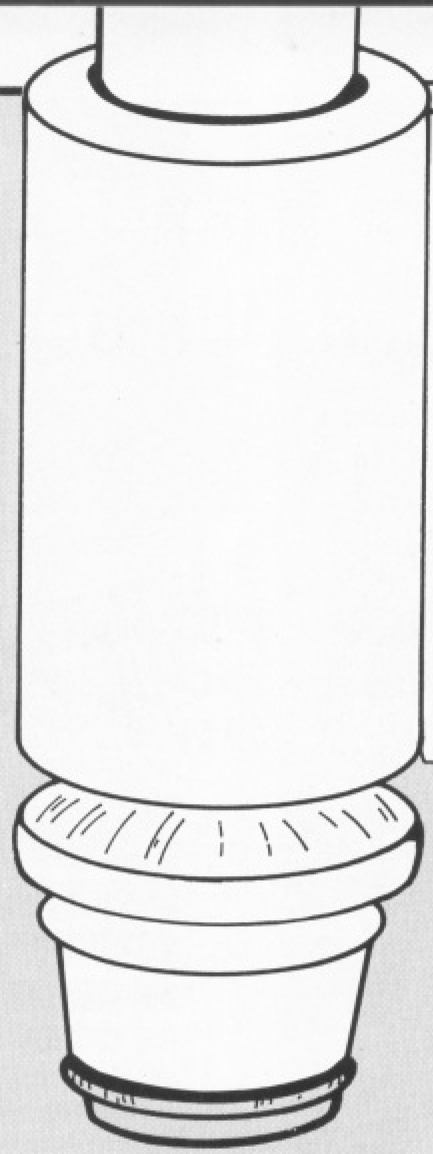
And that's it. There's plenty of things you can do with them. Why not have a go at printing hexadecimal and binary numbers?

```
10 REM BITWISE OPERATOR
20 REM BY Kevin Edwards
100 GOSUB 7000:REM SET UP M/CODE
110 NUM1=255:NUM2=15
120 GOSUB 7200:REM EOR
130 ? RES
140 GOSUB 7300:REM OR
150 ? RES
160 GOSUB 7400:REM AND
170 ? RES
180 END
7000 REM M/CODE ROUTINE
7010 FOR LOOP=0 TO 87
7020 READ A
7030 POKE (LOOP+1552),A
7040 NEXT LOOP
7050 RETURN
7100 DATA 32,76,6,173,100,6,77,102,6,1
33,212,173,101,6,77,103,6
7110 DATA 133,213,96,32,76,6,173,100,6
,13,102,6,133,212,173,101
7120 DATA 6,13,103,6,133,213,96,32,76,
6,173,100,6,45,102,6,133
7130 DATA 212,173,101,6,45,103,6,133,2
13,96,104,24,105,1,141,98
7140 DATA 6,104,141,99,6,104,162,3,104
,157,100,6,202,16,249,76
7150 DATA 255,255,0,0,0,0
7200 REM EOR
7210 RES=USR(1552,NUM1,NUM2)
7220 RETURN
7300 REM OR
7310 RES=USR(1572,NUM1,NUM2)
7320 RETURN
7400 REM AND
7410 RES=USR(1592,NUM1,NUM2)
7420 RETURN
```

Program I

Micro Scope

No. 5 Circle



CIRCLE computes a circle and draws it on a graphics screen chosen by the user.

It uses the XIO command to fill the circle as it's drawn.

If you remember your school maths you'll know that the general equation for a circle is $R^2 = X^2 + Y^2$.

```
10 PRINT "Graphics Mode...";
20 INPUT G
30 GRAPHICS G:COLOR 1:POKE 765,1
40 PRINT "Centre (X,Y)...";
50 INPUT X0,Y0
60 PRINT "Radius...";
70 INPUT R
80 R2=R*R
90 PLOT X0,Y0+R
100 FOR Y=R TO -R STEP -1
110 X=SQR(R2-(Y*Y))
130 DRAWTO X0+X,Y0+Y
140 NEXT Y
150 FOR Y=-R TO R
160 X=SQR(R2-(Y*Y))
170 PLOT X0-X,Y0+Y
180 IF ABS(Y)=R THEN GOTO 200
190 XIO 18,#6,0,0,"S:"
200 NEXT Y
210 GOTO 10
```

10-20	Ask for and receive the desired graphics mode.
30	Set up the mode and colour. Location 765 tells the fill command which colour to use.
40-70	Ask for and receive the centre and radius of the circle to be drawn. Note that no error checking is done to prevent the cursor going out of range in the chosen mode.
80	Square R. Since the radius is a constant for any circle being drawn, it's more efficient to calculate it once outside the main drawing loops than repeatedly inside the loops.
90	Plot the first point on the circle.
100-140	Draw the right-hand half first. Compute the position to be drawn to using the circle equation.
150	Start of loop to draw left-hand half.
160-170	Compute each point and plot it.
180	Check for top and bottom pixels.
190	Fill the circle as it's drawn.
200	End of loop.
210	Go back and start again.



Graphics exact too great a sacrifice

LEVEL 9's Red Moon is now in the shops and doing well by all accounts. It's the first Atari version with graphics, and part of Level 9's new strategy of releasing lower priced games between their normal priced "theme" games.

At £6.95, the same price as Emerald Isle, Red Moon is £3 cheaper than the Silicon Dream Trilogy, the final part of which, The Worm in Paradise, will be launched soon.

In the meantime we adventurers are to get to grips with the first Majik adventure from Level 9. The story goes, as recounted on the inlay, that when Majik was at its most powerful so was the moon which glowed – *surprise surprise* – deep red.

The moon and sun, however, didn't get on so well together, and whenever their paths crossed they tended to have a bit of a battle, and so the moon grew weaker and weaker. As a consequence so did Majik.

Obviously the Magicians' Union was none too pleased and so, in the moon tower of Baskalos, it placed a moon crystal powerful enough to cover the whole kingdom.

So what is the problem, you may ask? Well some little thing has nicked the crystal – and off you go to find it.

Two new elements appear in this game. First the use of spells, through a CAST command. Each spell requires a focus object – listed on the inlay. It might have been a bit more of a challenge if you had to discover which object was a spell focus.

Some of the connections are a bit remote. A pearl is the focus for the SNOOP spell and gloves for discovering whether or not TREASURE is valuable.

Also SAVE and RESTORE are listed as spells. No focus object is required, but it means that, as with the other spells, they will not work in the presence of iron, which can be a bit of a bind.

The other addition is of combat, as some of the treasures are guarded by the mythical beasts of the kingdom. This is the weakest of the new elements, since the combat routine is repetitive and is, in effect, a stand up battle between you and your opponent until one keels over.

The first screen sets you on a grassy plain and gives you the first taste of a slickly drawn colourful, yet somewhat two dimensional, graphics screen.

The plain is a sheet of green, with what appears to be six tufts of grass. The screen also refers to a yellow sun, but unless my Sony is playing up, or that is the RED moon up there, the sun is anything but yellow.

Just to help you at the start, you own nothing. By following the guide sent to reviewers you are able to quickly acquire several useful possessions. The ubiquitous axe and lamp, and by drawing the lake, a pearl, not from an oyster but oyster fungus – shades of Return to Eden.

In fact there is a great sense of *déjà vu* about the whole game. The graphics mean that the text is not as voluminous as usual and the whole game seems to consist of rooms, corridors and caves, with few interesting articles or problems other than a knock 'em down fight to the death.

The problems are not as involved as we have come to expect from Level 9, and some problems are recognisable from other adventures, such as getting past the watchdog.

Anyone who finishes The Pay-Off will have no problem here.

I reserve my final comment for Level 9's graphics. Let's face it, they add little or nothing to the game. They merely depict the fixtures of the

rooms in which you stand.

Even the more interesting characters, such as Sog the Newtling and the Rat, are not drawn.

At £6.95, Emerald Isle is a definite step forward by Level 9, a good cheap adventure with bags to do and lots of atmosphere. Red Moon loses much of that involvement through including graphics, and to my mind the sacrifice is too great.

On to a game which requires no introduction following the review in the August edition of *Atari User*, Infocom's **Hitch Hiker's Guide to the Galaxy.**

In that review the problem of how to get the Babel fish was touched upon, and it is an extremely entertaining puzzle which unfolds as you try to prevent each successive Babel fish from disappearing in an even more convoluted way.

It is not my policy to give away the answer to a problem. This particular problem, however, had me so enjoyably bamboozled that, step by step, I shall take you through how to solve it.

People wishing to extend themselves should read no furthur, but jump to Wizard of Akyrz later on.

Now then, as Arthur Dent, recently of no fixed planet, I have come to my senses in the hold of a Vogon space ship, and have a sleeping Ford Prefect and a Hitch Hiker's Guide for company.

Knowing from the books that I now need to insert a Babel fish in my ear in order to understand the wider universe and its various tongues, I press the button on the Bable fish dispenser, only for it to shoot across the room and vanish through a hole under a small hook!

No problem. Simply remove my dressing gown (I hope no one comes in), hang it on the hook, and try again. This time the Babel fish slides down the sleeve of the gown and slips through the previously unnoticed grating on the floor and down the drain. Curses!

Eventually, as no hoopy frood should be without it, I place my towel on the grating. It fits, and lo and behold the next Babel fish slithers neatly onto the towel.

Behold also the zippy little cleaning robot which whizzes through at breakneck speed, picks up the Babel fish and disappears through a small panel a few inches high in the wall. After several attempts at catching the robot I eventually hit on trying to block the panel.

Several bulky objects later, including myself, I place the satchel next to the panel.

Press the button and this time the robot ploughs into the satchel and the Babel fish arcs gracefully into the air, where a top half of the cleaning robot zips out and grabs the fish in mid-air and vanishes.

The next few hours are spent flinging a succession of objects into the air and watching a succession of extremely efficient cleaning robots gather them up, plus Babel fish.

Even summoning the Sirius Cybernetics Corporation engineer robot did

By Brillig

no good. You see, he only repairs the automatic thumb I tried throwing in the air.

Finally a brainwave.

Instead of throwing things into the air before getting the Babel fish try and get them there at the same time.

Carefully I piled the mail on the satchel, and pop out comes the Babel fish, down the sleeve of my gown, onto the towel, scooped up by the robot which smashes into the satchel, sending the whole kit and caboodle into the air.

So while the top half of the cleaning robot is frantically gathering up junk mail the Babel fish slithers neatly into my ear.

So now when the Vogon announcement that Ford and I are to be thrown overboard is translated I can still smile.

The HHG is without doubt the zaniest, funniest adventure yet written, even if much of the action simply unfolds before you.

It's an absolute must for fans and non-fans alike.

This leaves me time to have a quick look at **Wizard of Akyrz** from Adventure International, where Simon Ashford keeps finding his spectacles falling off.

Early in the game, Simon, you should find a painting held on the wall by a fine chain. That should fix you up all right, but carry plenty of objects as mapping this Mysterious Adventure is as tedious as ever.

Finally Glitch of the Month this time goes to S.P. Banit of Daventry and concerns The Pay-Off from Atari.

Not the two responses that he got from the game, however.

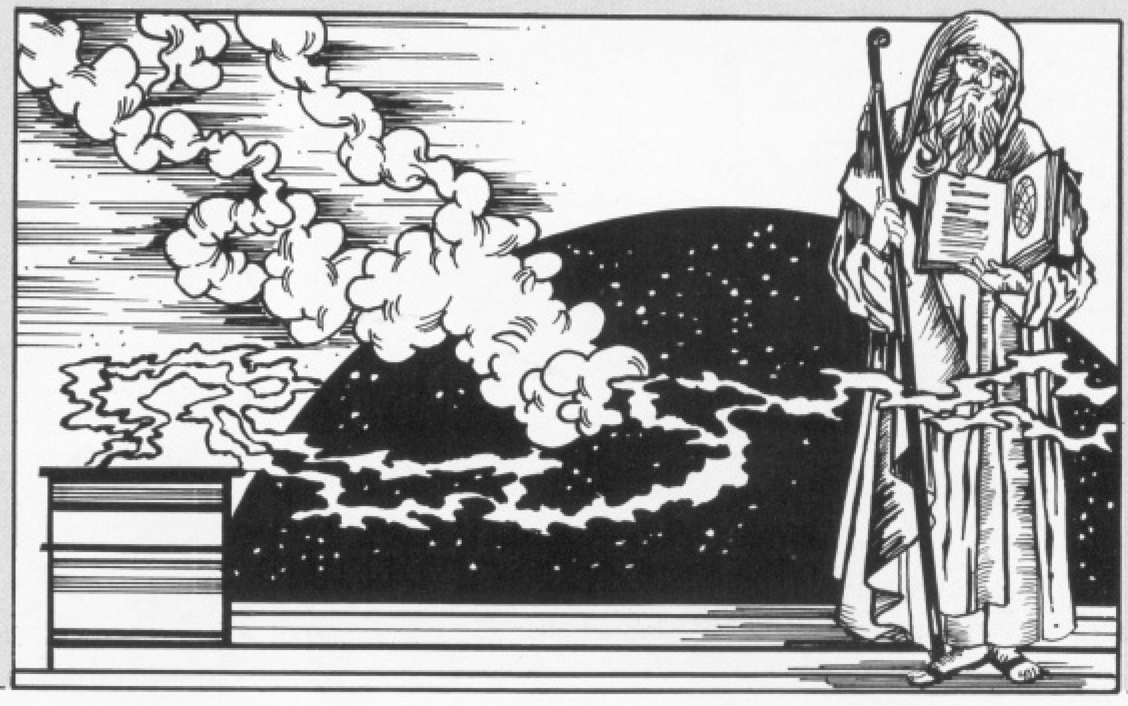
They are both quite deliberate, and you should get a chastening response for one of the things you typed.

No, the glitch belongs to the Atari Helpline, which told Steve that by cutting a notch in his disc he would corrupt it.

In fact that is the only way to save the game position on the disc provided, which comes with the Atari disc promotion package.

Failing that, any disc formatted to standard DOS 2.0 will enable you to save your position. Tut Tut Helpline. A medium T shirt is on its way to you Steve.

Also, move things around in the bank to find an exit you ought to realise is there, and you're almost home and dry at Luigi's.



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Graphics galore on the 800XL

RECENTLY I purchased an Atari 800XL and after a few reliability complaints with the 1010 cassette unit I settled down to the keyboard and taught myself the majority of Atari Basic.

However it does not support all the graphics modes of the GT1A chip, in particular the mode which allows 16 colours with a resolution of 80 × 192.

So I am left in a position where I know it's in there but I can't get to it.

Are there a few simple pokes to put me in this mode? If not, can you suggest a book with a routine to do this.

At the moment all I have is a few American books and they seem to deny the existence of such a mode.

In reference to the new XE range which I'm told will have a new improved disc drive available, should I buy a 1050 or will the new disc drive be compatible with the 800XL and the available disc software? – **M. Wilson, Yeovil.**

● You will be delighted to find that Atari Basic does support the extra graphics modes, even if the books you have been reading don't.

After Mode 8 there are another seven modes (or three on the old Atari 400/800).

Briefly, Mode 9 has one colour and 16 brightnesses (80 × 192).

Mode 10 has nine full colour/brightness combinations (80 × 192).

Mode 11 has 16 colours and 1 brightness (80 × 192).

Mode 12 is multicoloured text (40 × 24).

Mode 13 is multicoloured text (20 × 24).

Mode 14 is 2 colour (160 × 192).

Mode 15 is 4 colour (160 × 192).

See Dave Russell's Graphics column for more details.

We wouldn't bother waiting for the new drives – for quite a while yet software will be only available for the old drives, and a 1050 is quite cheap now anyway.

Banishing bogglers

HAVING been an avid Atari user for many years now, I recently bought your magazine which I found, to my delight, was that which I had been waiting for.

After years of Sinclair/Commodore/BBC domination, good old Atari have finally woken up their magazine/software markets which pleases me no end.

I am writing in the hope that you can solve a few problems I and other Atari Users I know of have had.

The first of these mind bogglers is that I was wondering whether the video touch pad from the Console game (1200) Star Raiders is compatible with the joystick ports of my Atari 800.

If so, how is it possible to "read" the various buttons of the pad?

Secondly, I have discovered in the Atari manual "Your Atari Computer" the peek/poke location for allowing up to seven files open simultaneously.

A full paragraph carefully explained that I should poke 1801 , x ; x being the amount of files I wanted to open at one time.

To my disgust this failed to work even after sustained efforts to discover the problem and I have viciously savaged various pieces of my Atari equipment.

I am sure I have enough memory, and using DOS 2.0S I should be allowed seven files open at once (I only require four) so what is the problem?

Finally, I was wondering whether you know of a program that could handle vertical and horizontal scrolling in various graphics modes. – **R. Chapman, Southampton.**

P.S. Here is a table of the peek location to see if a console key has been pressed:

PEEK (53279): You will get a value 0-7 and the following explains the meaning of each:

0	START	SELECT	OPTION
1	–	SELECT	OPTION
2	START	–	OPTION
3	–	–	OPTION
4	START	SELECT	–
5	–	SELECT	–
6	START	–	–
7	–	–	–

● Firstly, assuming that the video pad from Star Raiders works in the same way as the ordinary key pad for the VCS, there is a little program to read the buttons in the Atari Basic Reference Manual – that's the original loose leaf manual released with the old 400/800 machines, which is still available from Atari.

The POKEs for DOS which enable extra buffers DO work, but don't forget that they won't come into effect until you hit the System Reset button.

Better still, POKE the numbers you require, then go to DOS and format a new disc. Once you've written the DOS files to that disc, the new configuration can be booted up every time.

For anyone who wants to try for themselves, location 1802 contains the number of drives active in bit-coded form.

→

Lighting up the micro scene

I HAVE a small amperage bulb which lights quite brightly on the power supply at the joystick port on my 800XL.

I wondered whether you could tell me how I could turn it off and then on again.

What software would have to be written to achieve this and which two pins would the lamp have to be fitted to on the joystick port? – **Dean Rossiter, Wellingboro, Northants.**

● André Willey replies: The fact that the bulb may light quite brightly does not necessarily mean that the computer is rated to run it. The +5V DC output on Pin 7 of the joystick connector is only rated at 50mA maximum drain, which is not really enough to run even a small bulb.

The PIA output ports – the joystick connections – are rated for TTL levels, one load. This means that you can't directly run a bulb from the port.

However if you run a transistor from the TTL port and switch a bulb/battery combination, then the sky's your limit.

If you go one stage further and use an opto-isolator or relay, you can even switch mains – indeed, I've built a module to do that very thing.

The software would be very simple indeed, needing only a very few POKEs. If anyone would like to see an article on plugging Ataris into the outside world, then let us know and we'll plan one for a future issue.

Thus 1 means you have Drive 1 only, 3 means Drives 1 and 2 are active, 7 means 1, 2 and 3, etc.

Each new drive requires more buffer space to work, so if you only have one drive, POKE with 1 to save memory.

Location 1801 contains the number of active buffers. Each open file you wish to use simultaneously needs one buffer, plus each active drive will need two buffers.

Change this number if, for instance, you want more than three files open at the same time.

Don't forget, though, to either hit Reset, or format a new DOS disc and re-boot before you try to use the newly-set up configuration.

Bomb Run flashes

WHEN I received the July issue of the Atari User *I typed in Bomb Run on my 16k Atari 800, but when I ran the game the screen was disturbed by yellow and orange flashes.*

Is there anything wrong with the program?

I also typed in Treasure Hunt. I had not finished the program but I had to go out, so I taped the program with my Atari 1010 recorder.

When I returned and tried to load the program, the computer loading sound was distorted and "Error 140" appeared on the screen.

So I reloaded the program. This time the message "Error 138" appeared.

The whole program had gone. Please can you explain why this happened? – **Kalpesh Tanna, Kenton, Middlesex.**

● As far as we know there is no problem with Bomb Run.

Check all data statements and any pokes made from items read from data.

A faulty poke could easily crash the computer. Also, see the modifications offered by Peter Appleton on Page 58 in last month's *Atari User.*

The problem with your crashing tape sounds like the age-old bug in the operating system of the 400/800 computers – it was corrected from the XL range onwards.

Basically, the tape recorder buffer area can be left full of random data and this is not cleared before writing to the tape.

To correct this, anyone using a 400 or 800 computer should *always* type LPRINT before saving anything to tape.

This will clear the buffer by sending the contents to a printer. If you don't have a printer, you will get an Error 138, but the buffer will still have been cleared, so you can ignore the message.

Pixilated pixels

I OWN an Atari 400 and both 410 and 1010 recorders. Looking at the programs in your magazine, I noticed that it was a headache typing them in. You have a monthly disc with the programs on, but why not a monthly cassette?

This is quite irritating because I have no choice but to type them in. I suppose that other Atari users think the same.

Also, when I type in graphics Mode 8 on my 400 it should only be one colour, but when I start drawing lines, they end up in lots of different colours. Why is this?

Finally, can you name anywhere where I could buy a 13-pin Atari input/output plug like the ones on the tape decks? – **A. Groves, Bristol.**

● The multicolour lines in Graphics 8 are not the fault of the computer, but of the TV you are using.

The British TV system is made up of tiny patterns of red, green and blue dots. By turning three adjacent dots on "full", you get a white image on the screen.

The problem is that a Graphics 8 pixel is about the size of one of these small

LOOKING FOR A BETTER BASIC

I OWN a BBC Micro and am considering purchasing an Atari, due to its excellent graphics and colour, and also as it uses the same 6502 microprocessor, whose assembly language I am accustomed with.

I know that the Basic provided with the machine is quite good, but is not structured. I should therefore like you to tell me what is the best Basic to buy for it, if necessary, which has structured programming and is generally similar in concept to BBC Basic.

I have heard that Basic XL is excellent, and would be pleased if you could give me any details on this. I have also heard of a language known as Action!, and would like to know the purpose of this.

I would like to know the best assembler cartridge (disc) to buy. I already know the 6502 operation codes, but do not know the Atari computer's built in machine code routines, and the start of screen memory locations, and how they are constructed.

I should therefore be grateful if you could tell me the names of any books giving the relevant information, that is, a book like the Advanced User Guide for the BBC, except obviously for the Atari.

I know sprites are provided with the computer, and wonder how many there are, and whether they can be multi-coloured as are the sprites on the Commodore 64.

Also can you give the name of a book which had this sprite information in it?

Is it possible to use one disc drive between two computers, without actually having to plug and unplug the drive between each computer?

Finally, do you know whether there is going to be a £400 Atari ST, and if so, when is the 'ST' range going to be on sale? – **N.C. Judge, Ashford.**

● André Willey replies: Both Basic-XL (and its new, even more powerful, big brother Basic-XE) and Action! are products of OSS in California, and can be obtained from many dealers or from the UK distributors, Software Express.

They each have their own advantages. Basic-XL/XE have many features not available in normal Atari Basic, including structures, sprite handling, better I/O, etc.

They are also about three times faster than Atari Basic.

Action! is a very high speed editor/compiler system which behaves like C and runs faster than anything else on the Atari except machine code.

It is also quite easy to write in, with a format nearer to structured Basic than C.

I use both extensively, and recommend them without question to any serious Atari programmer.

Your second question boils down to OSS again. Mac-65 (cartridge or disc) gives you speed, macros, etc. It also is an editor/assembler, though it can do a complete disc-to-disc assembly if required.

For the technically minded, I recommend three main books:

De-Re-Atari (Atari) is a tutorial/guide to many features of the hardware and OS.

Mapping the Atari (Compute! Books) is a superb memory map, and I find it quite invaluable. Once you know the system, this book would be referred to more than any other.

Technical User Notes (Atari) are the complete notes, including circuit diagrams, for the computer. You also get a full operating system listing and full OS documentation.

The above books cover sprites too, in great depth. There are eight, single colour, sprites (four large, four small), but these can be multiplexed and so forth "on-the-fly".

The cheapest ST, the 260ST, will be around £500.

"colour gun" dots, and so as the TV turns off all adjacent dots – thus it can't properly balance out the first colour with two others – you get a colour bias.

If you use a high resolution monitor the effect becomes much less noticeable.

However, the effect can actually be quite pleasing if you utilise it well. See Dave Russell's Graphics column in the October issue for a good example program.

13-Pin I/O plugs are quite hard to get hold of, but you could try Silica Shop or Software Express.

As for monthly cassettes of *Atari User* programs, these are now available – see Page 61.

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

3D colour system

I AM looking for a three-dimensional colour drawing system for the Atari.

I have seen two advertised already, Atari World and 3D Super-Graphics. Both were advertised by Maplin in 1983, but when I rang them they had never heard of them. They are made by United Software of America.

Do you know anyone who stocks them or is willing to order it?

I have tried Silica Shop, Maplin and Zoomsoft. Has anyone heard of it? – **Nigel Mirza, Rainham.**

● Both Maplin and the Atari Center in Broad Street, Birmingham, have had these titles in stock at one time or another, but if they have sold out. Perhaps Software Express can get one for you, as they specialise in getting special order items in from the States.

You may, of course, find that these items have been discontinued.

Books on machine code

WOULD you please be so kind as to tell me where I could obtain a machine code book for the Atari, or the name of a book with this information in. – **Shane Bradbury, Hartwell, Northants.**

● That's an easy one. Try Compute's First Book of Machine Code, in conjunction with their Mapping the Atari (Compute! Books', available from most good Atari specialists).

Also recommended, but on 6502 machine code generally, are Rodney Zaks' Programming the 6502 and Lance A. Leventhal's 6502 Assembly Language Programming.

Don't forget that with the last two a good book on the workings of the Atari is also essential, such as Mapping the Atari, or Atari's own De-Re-Atari and the Technical User Notes.

Logging on to MicroLink

I HAVE an Atari 800 computer, an 850 interface and a WS 2000 modem.

I have until recently used Hometerm software by Batteries Included to access bulletin boards.

Two weeks ago I paid a subscription to MicroLink but on trying to use this excellent program on MicroLink I was unable to log on to the system.

I am however able to log on with my 520ST with the inbuilt software, so there is no problem with the modem.

I have printed a complete disassembly of Hometerm but am unable to find where the RS232 port is configured as I am only a beginner at machine code.

I would be grateful if you or anyone else could tell me how to correct this problem as I am reluctant to change this excellent program. – **R.A. Horner, Sheffield.**

● We had exactly the same problem with HomePak as you seem to be experiencing.

After trying other programs – much less user friendly, but easier to re-configure – we found the problem was with the PSS system, not with HomePak.

What HomePak does in Ascii mode is tc send a line feed after every Return character. This causes Gold, and most other boards we have tried, no trouble at all.

However PSS needs two Returns with nothing between, so the line feeds throw it off completely.

The cure is to switch into Atari mode from menu, and whenever you should type Return (at ends of lines, etc), just type Control–M instead.

Once logged on, that is as soon as you have typed in your password, hit Control–S to pause the system, return to Ascii full-duplex mode, and use Control–Q to restart MicroLink.

We have configured a defaults file on HomePak to start up in Atari mode, and stored a macro to do all the work for us.

All we then need to do once the macro is complete is hit Select (for menu), A (for Ascii), Return (for main screen again), then Control–Q and we're on-line. Have fun!

Saving data files

I WOULD like to congratulate you on your superb new magazine, it's about time Atari users had their own publication.

I recently purchased a 1050 disc drive and at the same time Microsoft Basic II.

However I can't seem to save data files successfully, although I know you should use the OPEN, CLOSE and EOF commands.

Please help, as I need to be able to do this for my O level project.

Might I suggest you start a page for classified advertisements, which should also include the names and address of user groups? – **D. Hansen-Luke, Pulloxhill, Beds.**

● As far as we know Microsoft Basic II works fine as far as I/O goes, although the commands are a little different to those in standard Atari Basic.

There may be some problems when trying to use it with some DOS variations, such as DOS 3, so perhaps your problems lie there?

Anyway, if after trying with another DOS you still have problems, contact the Atari Helpline on 01-309 7770.

Printer for labels

I NEED a roll feed printer with ratchet for printing labels.

I have an Atari 800 computer with disc drive and tape recorder, so I would like any available information about the interface and software to go with the printer.

As it would be used to print address labels and product information, the software must be able to store the necessary addresses and information ready to print. – **P.I.C. Gooch, Brighton.**

● Atari's own 1029 printer is

→

probably the cheapest available with friction and tractor feed, and it has the advantage of plugging straight into the machine.

It allows graphics printing, but is rather poorly supported by software. Print quality is only fair, but it retails at about £200.

If you can afford that little bit extra, probably the best printers to look at for linking to an Atari are the Epson range, especially the established RX 80 F/T or the new LX 80 near-letter-quality model with optional tractor feed.

These are supported by a wide range of software which also allows you to print graphics. They use a Centronics connection, so will work with most commercial printer interfaces – Atari 850, Blackthorn, FCC Systems.

It is really a case of horses for courses though, and if you find a cheaper printer fits the bill exactly, then buy it.

The other thing to bear in mind is that if you may want to use a modem in the future try to get hold of an 850 module, because that has both serial and parallel ports.

On the software side, a good database to try is Synapse's SynFile +, which is not too expensive and is very versatile.

It will allow storage to any density of disc drive, plus full list/label options for your printouts.

It is also driven by pop-up menus, which makes it very easy to use.

A case for keeping it clean

DO you know of anywhere I could get a case in which to keep my Atari 800XL and 1010 recorder – I've seen them for a couple of other types of computer but not for the Atari.

A dust cover isn't really protective enough, so at the moment I have to use the enormous cardboard box in which it came, so a case would be really very useful.

Also could you recommend a book for the 800XL which will actually get me doing things on it.

At the moment I seem to use it solely for games, as my very basic O level computer studies doesn't exactly provide much inspiration.

Finally, a problem I have relating to the game Citadel Warrior from Atari Smash Hits Vol. 3.

There seems to be something in the program which stops it after seven minutes, so how is it possible to get beyond the first part of the second level? – **Deborah Thompson, Nottingham.**

● We don't know of any cases for the 800XL plus recorder, but someone out there probably makes them.

If anyone knows of such an item, perhaps they could write in.

As for books which get you doing something, the Compute! series of Atari books are very extensive, and feature articles on many diverse aspects of Atari computers.

We wouldn't really recommend all of them for someone who is just starting with their machine, but you have obviously got to grips with Basic already.

They contain programs and tips on all sorts of subjects, and would be a good starting point for developing your own ideas.

Contact any Atari dealer or mail order specialist for details of the range, which is quite considerable.

Would anyone else care to comment on Citadel Warrior?

Connecting a printer

I AM interested in buying a printer for my Atari 800. I actually require a letter quality printer, but the market for all types of printer seems rather limited.

There were virtually no adverts for printers in the first issue of Atari User. *Please can you tell me what is available.*

Does anybody besides Atari themselves manufacture printers directly compatible with the Atari bus?

What is the specification of the connector for the Atari bus, that is what signals are on what pins as well as the connector type?

Finally, what are the disadvantages of connecting a printer via a joystick port? – **D.A. Wilson, Reading.**

● Atari makes a letter quality printer – the 1027, but it is very slow and noisy. It does, however, connect directly to the Atari without an interface, which saves you a bit of money.

It is the only letter quality we know of which can connect directly to the Atari bus.

Most types of printer will connect via a Centronics type connector, and any computer shop will be able to show you printers which can do this.

The bus is a special 19,200 baud serial interface, and can't be linked to printers without a lot of extra circuitry to convert the serial signal to the parallel Centronics standard.

You can buy such interfaces, and there are about half-a-dozen currently available from various companies – see adverts in this issue.

You can connect a printer via the joystick ports if you write a machine code handler routine, but it would only work with your own programs, say Basic listings. Any commercial software at all will expect the printer to be attached via the bus, and it would be almost impossible to modify for joystick port use.

Drawing software

DOES anyone know of any technical drawing/drafting software which is available for the Atari 800XL?

Numerous packages exist for the Apple and BBC computers which use the same processor, the 6502, as the Atari.

The Atari Touch Tablet should be an ideal input device for such a program.

The increasing use of CAD (Computer Aided Design) in engineering should promote a greater interest in this type of application on home computers, particularly those with the graphics capabilities of the Atari.

Schools and technical colleges would also appreciate such an application no doubt. Anybody got any ideas? – **A.C. Chamberlain, Tunbridge Wells.**

● We don't know of a specific CAD package for the Atari, but Datasoft produced something very similar called Graphic Master, which allowed designs to be created on a Graphics 8 screen, manipulated, rotated, flipped, etc.

Routines were included for lines, circles, polygons, overlays, moving blocks, changing the scale of portions of the design and three different text overlays.

You could also transfer portions between work screens and the main design screen, and use a system of icons, for example electronic component symbols.

Once drawn, the images created could be stored on disc or printed on an Epson or NEC-type printer.

It's quite an old program, but well worth searching for. If you can't find one see if someone like Software Express can import a copy for you.

Problem with Basic

I HAVE a problem with Atari Microsoft Basic V1.0.

I have just bought a 130XE to replace my old 800, at the same time I received my copy of DOS2.5 with the Ramdisk utility. What I would like to know is, can I use the Ramdisk with Microsoft Basic booted,

and how can it be done? – **George Lusher, Erith.**

● The old MicroSoft Basic was recorded on a master disc which included DOS 2.0 and then protected. This means that short of copying it to another disc and re-protecting it – a complex job – it can't be used with a different DOS.

However, Microsoft Basic 2 – the cartridge – can be used with DOS 2.5, as can Basic-XL from OSS.

If you do decide to upgrade, we recommend Basic-XL over Microsoft, as it features almost all that the MSB-II does, plus better graphics routines and memory management.

More support needed

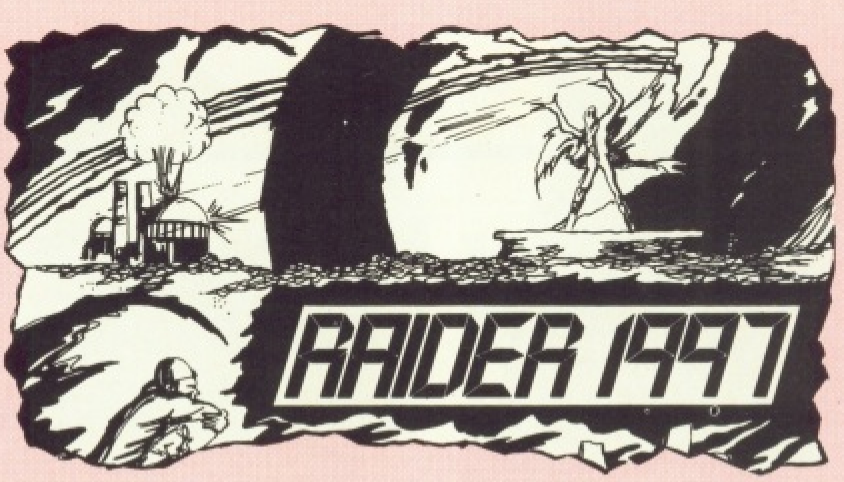
I'M selling my Commodore 64 to buy the Atari 130XE.

There are several shops not far from my home that sell Atari computers, and software for just about every home micro, other than for the Atari.

I am thankful for your excellent magazine from which I will be able to send off for software.

Why is there so little support for Atari computers, that are in a class of their own? – **Andrew Sharp, Sale, Cheshire.**

● Support for Atari machines seems to be increasing all the time. Keep asking for Atari software in the shops and maybe they'll get the message.



Trouble on line 1020

I HAVE a 600XL and I am a great fan of adventures so I typed in Raider 1997 as soon as I got my copy of the August edition.

Having only 16k I can't buy any adventures so you can imagine my annoyance when I got an error 5 at line 1020. Could you please tell me what might be wrong with it?

Also, I think you should have more competitions and software reviews. – **Andy Latto, Fife.**

● You've probably made a typing error somewhere. Check line 110 where B$ should be dimensioned 20.

Shorter programs

CONGRATULATIONS on yet another excellent issue of Atari User.

It is a pity, however, that you see fit to devote letter space to games scores. This sort of information is of interest only to its sender, usurping space which could be put to better use.

Could you please at least ration the coverage given to this tedious and gratuitous ego tripping?

I read with interest your guidelines for putative contributors. While it must be agreed that they are sensible and well thought out, they could also be a little restrictive.

Your insistence on disc or cassette support could result in a dearth of the very useful short program.

Surely only the most fanatical or opulent among your readers would willingly shell out a fiver on the chance of their minor effort proving acceptable. Accordingly I have a suggestion.

Could you not instigate a regular shorts feature? Submissions could be accepted in the form of listing + documentation, under the understanding that any not used would be binned.

I am sure that you would attract plenty of material, and so could be very choosy.

The financial incentive need not be particularly high, and the extra work load on editorial staff minimised. – **Bruce Woodland, Harlesden, London.**

● Submitting anything should only cost you postage both ways. Any disc or tape will be returned. The "shorts" is a good idea, but even they need to be typed in so they can be listed legibly and it all takes time – a rare commodity around here.

Pin outs, please

I HAVE just purchased an Atari 800XL and am delighted with it. Can you print the pin outs in your magazine as I am interested in connecting a disc drive, modem and printer all at the same time.

I would like to run a lead to connect my 800XL to another 800XL in the next room. I know this is possible but I don't know how. I would like to be able to ask a question on one 800XL and answer it on the second one! I can't see any reason why I shouldn't be able to continue to add 800XLs ad infinitum.

So how about an article for the technically minded ones of us that have a soldering iron. – **John Hopkins, Wisbech.**

● Pin outs are given in the Technical User Notes, along with timing diagrams that you can purchase from Atari.

However you can simply plug a disc drive, printer, interface for RS232, cassette and so forth into the machine at once. Each new unit plugs into the extra socket at the back of the last one, like a daisy chain.

The best way to connect machines together is via the joystick ports.

We hope to have an article detailing this technique in a future issue.

Data on disc drives

CAN you send me some details on the 1050 and 810 disc drives.

The Thorn game Tennis does not seem to work on my 800XL. Why is this? Can I get a cartridge or cassette that will get this game to work? – **S.T. Dunn, Waterlooville, Hants.**

● The best thing to do if you want details on disc drives is to contact either your local dealer or Atari in Slough, both of whom can give you the information you require.

We would recommend the 1050, as it can store more data, is more compact and quieter.

Otherwise, there is no real difference between the drives except that a few – a very few, about five or six – old programs would not load correctly on the new drives. New versions of these titles have, of course, been brought out, but if a shop has stock over two years old it could be suspect.

The problem with Tennis is more fundamental – many old programs will not work with the XL computers at all.

This is due to the software houses not having followed Atari's guidelines correctly, so the program won't work on a new machine.

Thorn/EMI Tennis is so old that we don't even remember it, but the best solution for a cassette-based system is either XL-Fix or Computer Support's 80 Column Pack. Atari's own translator is good, but is only available on disc.

The 80 Column Pack has the very useful side-effect of converting the XL operating system into an enhanced version of the old Atari 800 one.

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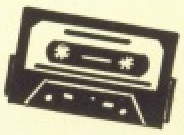
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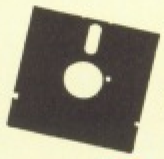
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Then give your fingers a rest by sending for our monthly disc or cassette containing all the programs from each issue of Atari User. See order form opposite.

MAY: Alphabet Train: The combination of colour, sound and animation makes this early learning game a winner with the children. **Sounds Interesting:** Drive your neighbours potty with these ready-made sounds. **Hexer:** Enter, display and run machine code programs with this hexadecimal loader. **Attack Squash:** A fast-action game to keep you on your toes. **Reaction Timer:** See how fast your reactions really are. **Binary:** Convert denary numbers to binary notation.

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JULY: Bomb Run: Flatten the deserted city and land safely. **Disassembler:** Find out what's going on deep inside your Atari. **Treasure Hunt:** Use logical thinking to find the treasure. **Password Generator.** Keep generating passwords till you find one you like. **Keyboard:** Convert your micro into an organ. **Quasimodo:** Can you sort out the mess of ropes in the belfry?

AUGUST: Assembler: Make machine code programming easier. **Fruiti Gambler:** Save money with this fruit machine simulation. **Mandala:** Complex patterns made easy. **Protection:** Protect your programs from prying eyes. **Display List:** Demonstration programs. **Raider 1997:** Futuristic text adventure. **Touch Tablet:** Demonstration programs.

SEPTEMBER: Maze Munch: Help Horace the Blob munch the maze monsters' morsels. **Data Maker:** Convert your machine code routines to DATA statements. **Display List:** Demonstration programs. **Screen Dumps:** Dump your Mode 8 screens to a 1029 printer. **Bricks:** Solve the Bricks problem.

OCTOBER: Pontoon: Twist? Bust! **Memory Dump:** Examine memory in hex and Ascii. **Display List:** Demonstration programs. **Wrap Trap:** Action game for one or two players. **Computer Canvas:** Make your own micro masterpiece. **Assembler Update:** Improvements for the RAW assembler. **Ram Disc:** Make the most of the 130XE's extra memory.

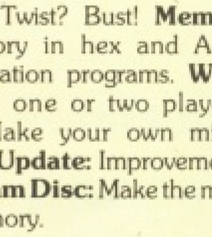
NOVEMBER: Guy Fawkes: Help Guy escape from the guards. **Converse:** Teach your Atari to be a psychotherapist. **Display List:** Demonstration programs. **Bitwise Operators:** Utility to provide logical functions. **Circle:** Draw and fill a circle. ***Plus:*** Freebie of the month – **Creepshow** machine code pinball game.

FREE

Starting this month we are giving away an extra game along with the monthly cassette or disc.

To start the ball rolling, this month's offering is CREEPSHOW, a superb machine-code pinball game which will keep you glued to your Atari for hours.

And remember, you won't find it listed in the magazine – it's only available if you buy the monthly cassette or disc.



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Back issues



£1.25

May issue: Profile of Jack Tramiel, preview of the new machines, Attack Squash, Adventuring, Alphabet Train, Hexer utility, Software reviews, Sounds, the 6502, Microscope, Atari Insights – regular series of tutorials: Bit Wise, Beginners and Graphics.

June issue: In-depth analysis of the 130XE, Submarine, Adventuring, Random numbers, Software reviews, Frog Jump, Microscope, Sounds, Atari Insights – regular series of tutorials: Bit Wise, Beginners and Graphics, special 12 page feature on Communications.

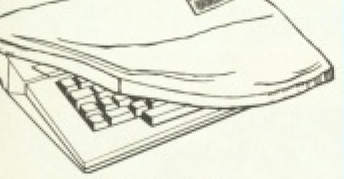
July issue: Disassembler, Bomb Run, DOS 2.5, 17 Commandments, Adventuring, Display List Tutorial, Software reviews, Power Functions, Treasure Hunt, Keyboard Sounds, Microscope, Insights – Regular series of tutorials: Bit Wise, Beginners and Graphics.

August issue: In-depth analysis of the 520ST, program protection routines, Fruiti Gambler, Assembler, Touch Tablet programs, first look at Logo, Raider 1997, Dos 2.5 upgrade offer, Display List Tutorial, Microscope, Software reviews, Insights – regular series of tutorials: Bit Wise, Beginners and Graphics.

September issue: 8-page special on the 520ST, Mode 8 screen dump routine, Maze Munch, Data Maker, Display List Tutorial, 68000 addressing modes, list processing with Logo, Software reviews, Insights – regular series of tutorials: Bit Wise, Beginners and Graphics.

October issue: Computer Canvas graphics program, Updates for the RAW 6502 assembler, 130XE Ram-disc utility, first ST book on offer, Hex/Ascii memory dump utility, Pontoon, Software reviews, 68000 operating environment, Wraptrap, Insights – regular series of tutorials: Bit Wise, Beginners and Graphics.

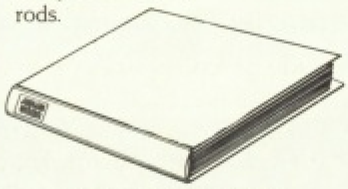
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June	7018		
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